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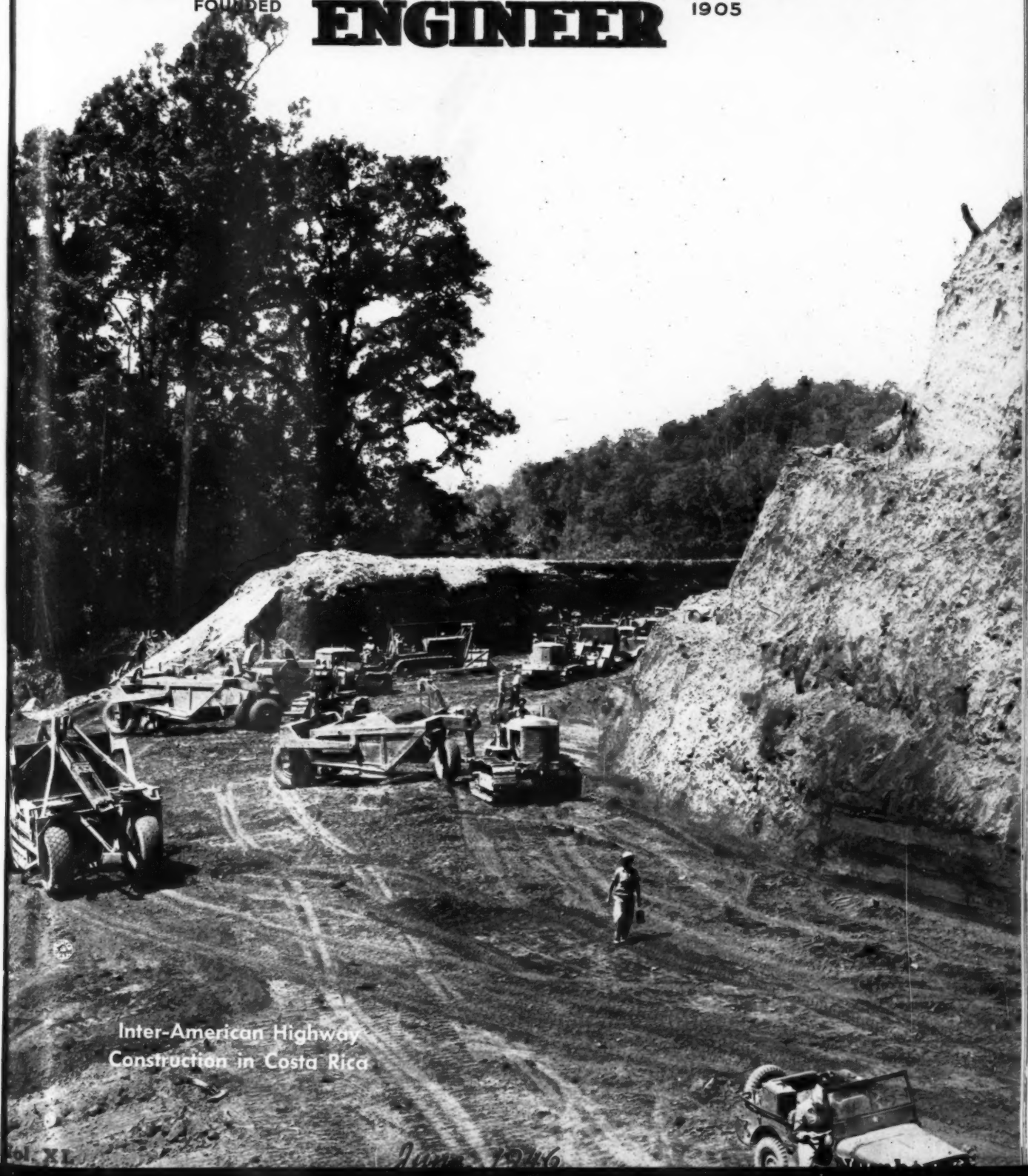

Inter-American Highway Construction in Costa Rica

Vol. XL June 1946

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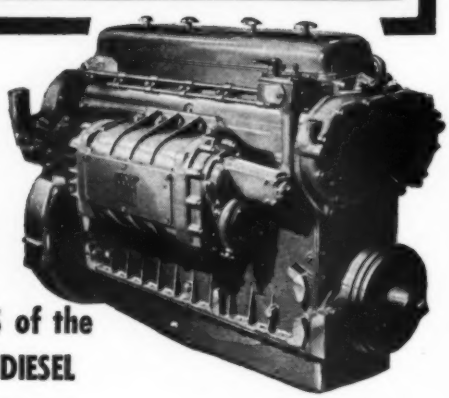
DIESEL POWER



FEATURES of the GM "71" DIESEL

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- Quick starting under all conditions
- 2-cycle, smoother operation
- Easy accessibility of wearing parts
- Unit injectors—no high-pressure piping
- Maximum parts interchangeability regardless of number of cylinders
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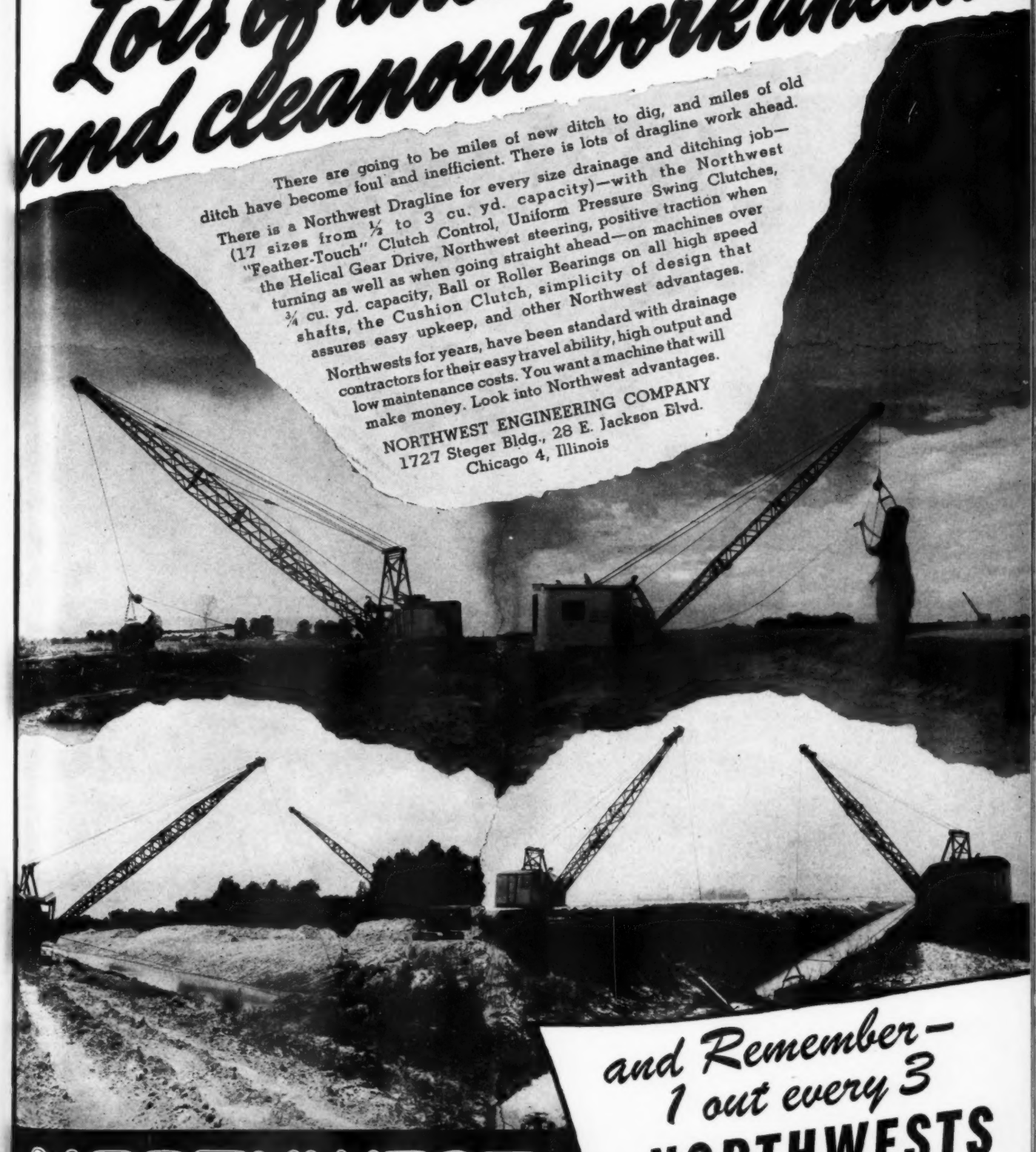
GENERAL MOTORS

Lots of ditch and cleanout work ahead!



There are going to be miles of new ditch to dig, and miles of old ditch have become foul and inefficient. There is lots of dragline work ahead. There is a Northwest Dragline for every size drainage and ditching job—(17 sizes from ½ to 3 cu. yd. capacity)—with the Northwest "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, the Helical Gear Drive, Northwest steering, positive traction when turning as well as when going straight ahead—on machines over ¾ cu. yd. capacity, Ball or Roller Bearings on all high speed shafts, the Cushion Clutch, simplicity of design that assures easy upkeep, and other Northwest advantages.

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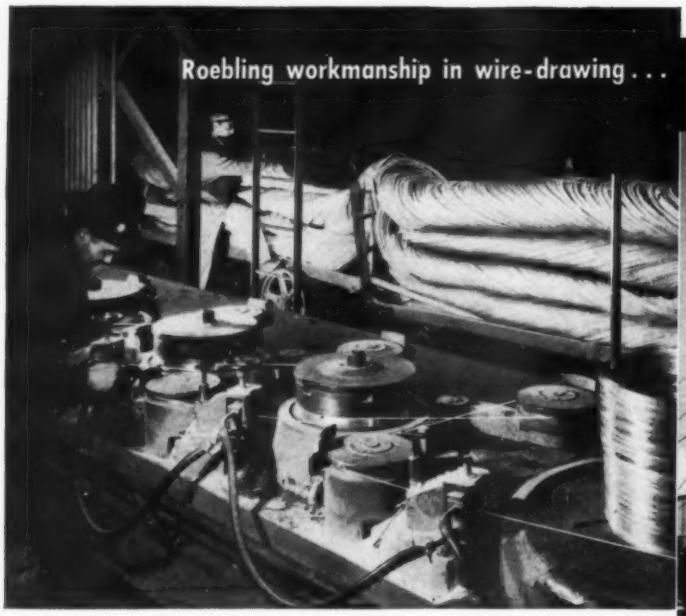
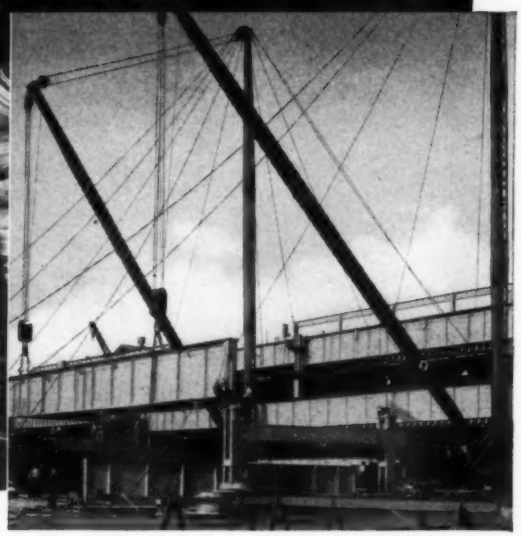
CAN HELP CUT CONSTRUCTION COSTS

Old Man Competition Is Getting Ready . . .

Roebling wire rope can help keep your costs down



Roebling workmanship in wire-drawing . . . *means longer rope performance on the job!*



TODAY, the construction business is returning to "normal" peacetime conditions. But it's far from the pre-war normal. Material costs are up. Labor costs are higher. Operating costs *must be held down.* One way to help hold them down is to specify Roebling "Blue Center" Steel Wire Rope.

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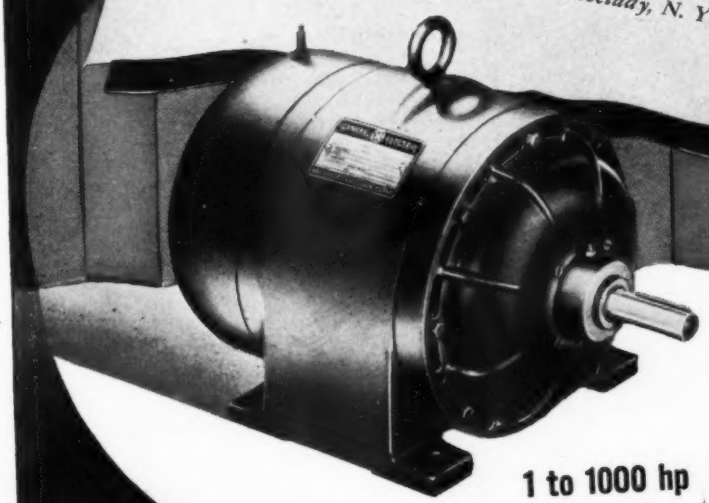

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Pull the control level all the way back to the rear of the quadrant. You can raise a full bucket load simultaneously while moving the TracTracTor forward or backward or swinging it around.

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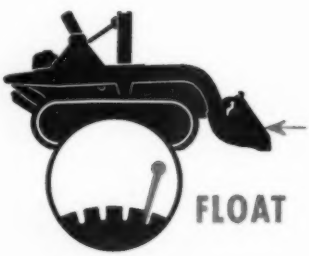
The position for digging. In this "notch" you add downward thrust to the blade of the bucket or bulldozer for hard digging.



Commonly used to drop the bucket fast after discharging a load. Also ideal for finishing, dragging, leveling, etc., by backing the TracTracTor over the area being graded; the bucket edge is free to follow the surface, to move up or down by its own weight, similar to a cable operated machine.

WATCH any Bucyrus-Erie DOZER-SHOVEL operator and chances are you'll be amazed at the ease with which he combines the action of the bucket and the travel of the TracTracTor to get a full load . . . to lift the bucket out of the ground and swing the TracTracTor at the same time . . . to dump and lower the bucket for latching while the TracTracTor backs away from the trucks.

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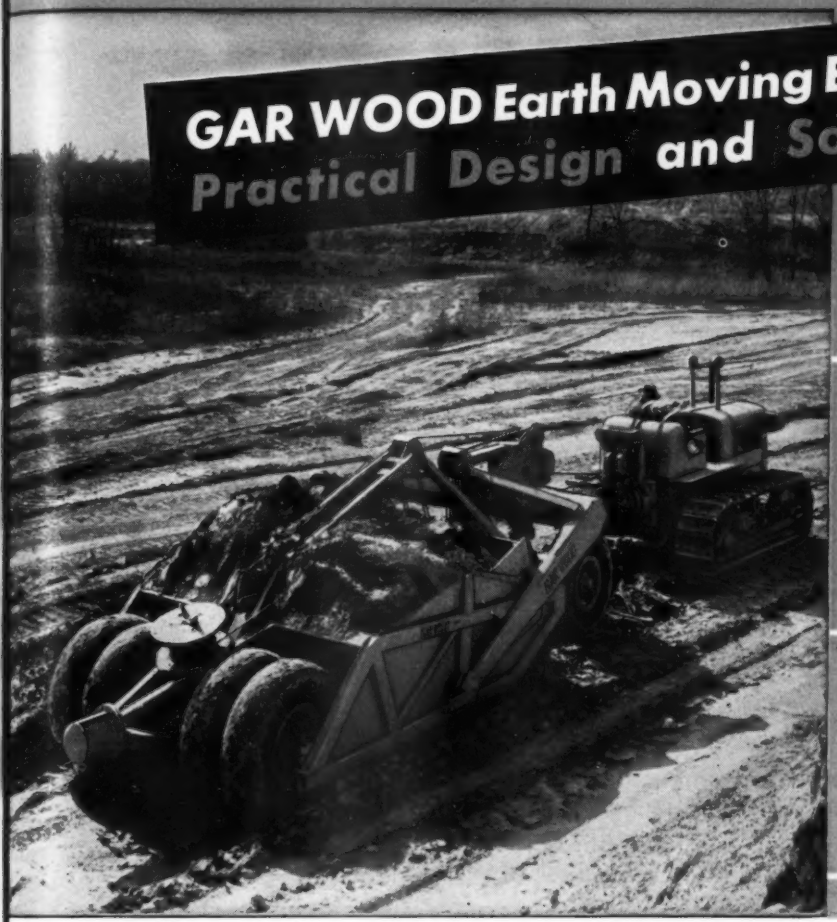

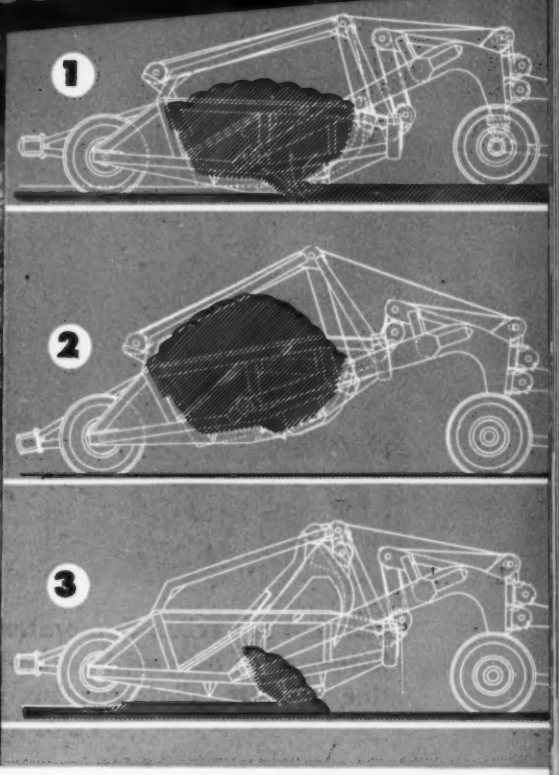

GAR WOOD 4-Wheel Cable Scrapers are *all scraper*, well engineered, honestly built of high quality materials, developed and proved over a period of many years—scrapers that *hold together* and get big yardage jobs done at consistently good speed with an absolute minimum of down time. Some of the many outstanding engineering features, as well as the rugged simplicity of the mechanism, are shown in the three drawings above:

1. LOADING: The self-loading is by positive digging to depths down to 12". "Boiling" action of dirt loads bowl and patented apron evenly by reason of proper angle of the cutting edge. Positive digging action is assured in all types of materials by proper location of draft point.

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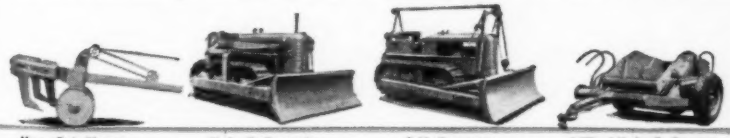
3. DUMPING AND SPREADING: The first portion of the load dumps automatically when the apron is raised. The remainder is forced out by *positive rolling ejection.* Note extremely large apron opening to facilitate this ejection of all types of materials. Cutting edge remains stationary throughout cycle, providing for even, *accurate control* of the spread by the heavy duty *Gar Wood Cable Control Unit.*

Contact your Allis-Chalmers dealer. He will be glad to show you Gar Wood earth moving equipment and arrange for you to see on-the-job performance in your locality.



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Digging for Dicalite

Great Lakes Carbon Corporation uses four power shovels, including new Bucyrus-Erie 38-B 1½-cu. yd., to strip and mine Dicalite, diatomaceous silica, in California hills at Palos Verdes.

• General view of stripping. Note ledge of good Dicalite material in background. The 38-B makes five passes per truck and loads out 198 truckloads in an eight-hour shift.

By ROBERT J. GREEN

ONE OF THE MOST versatile materials in the United States is a product called Dicalite, produced by the Dicalite Division of Great Lakes Carbon Corporation. Formerly called infusorial earth, Kieselguhr, and other terms, the material is now usually designated as diatomaceous silica. Finished products are widely used as filtering materials, high temperature insulation, absorbents, and fillers for numerous products, such as paint, paper, rubber, plastics, and a host of others.

It is hard to believe, when the finished powder is seen, that Dicalite is a silica product, dug from the California hills at the Palos Verdes Estates by power shovels, hauled to the processing mill by dump trucks, and powdered so fine that some of the products leave only a trace on a 325 mesh screen. That is the case, nevertheless, and its excavation is a rock handling job with some certainly unusual problems.

For instance, this diatomaceous silica will crush under the wheels of hauling trucks, making a very fine powder. Haul roads become dust clouds unless water is applied daily. The diatomaceous material is so valuable that excavation tolerance, distinguishing between overburden and usable Dicalite, amounts to only one inch. Think of a one-inch tolerance with a power shovel! And although the finished materials weigh only 8 to 15 pounds per cu. ft. when dried and ground, the crude is so saturated with water when the shovels dig it that it weighs at least triple of that.

The present Palos Verdes quarry and mill is located approximately 20 miles southwest of Los Angeles, near Walteria. It was opened in 1930 by The Dicalite Company, which is now the Dicalite Division of Great Lakes Carbon Corporation. At the present time the excavation and stripping of all overburden is being done by contract with Clyde L. Sheets of Los Angeles.

Owing to the competitive nature of the manufacture of this material, the exact thicknesses of usable and overburden strata cannot be given. The excavation is handled by first removing all overburden and dumping it in mined-out areas.

Recently some rather extensive overburden was encountered in

opening a new 50-acre part of the lease, so a newer power shovel of greater capacity was needed. A Bucyrus-Erie 38-B shovel, with a 1½-cu. yd. dipper equipped with standard rock teeth, was rented from C. G. Willis and Sons, general contractors of Los Angeles.

The 38-B, powered by a General Motors six cylinder, two cycle diesel engine rated at 635 h.p. at 1400 r.p.m. was spotted on one of the heavy banks. Four 8½-cu. yd. GMC dump trucks were assigned to it on a haul averaging 2000 feet. The 38-B operator, Charlie Kyttle, has been a shovel runner for 26 years, and his superintendent, J. M. Lyons, has been in this quarry since it started. They spotted the new machine with its tracks approximately parallel to the bank, so that it could dig from the front quarter and travel between trucks.

Trucks were double spotted so that as soon as one finished loading another was backing in or waiting on the opposite side. The overburden, which also contains a very small percent of silica, tends to heap on a shovel dipper, so the shovel actually digs more than its rated water level dipper capacity of 1½ cu. yds. a pass. Five shovel dippers of material heap a truck. The 38-B loads an average of 175 GMC truckloads in eight hours, and has on several occasions loaded 198 truckloads. Conservatively estimated, that amounts to 1550 cu. yds. per shift.

Unfortunately for yardage, however, it is not always possible to work the shovels at capacity.

• Above: Two laborers work with each shovel stripping overburden so that all overburden is cleaned off the vein of diatomaceous silica being mined. They also direct the operator on his grade to follow the Dicalite seam. Right: "Shorty" Lyons, excavating superintendent for the past 16 years, has just checked the stripping operation in the background. Below: Allis-Chalmers tractor with Isaacson bulldozer is back-blading loose material to make a solid, smooth footing for the shovel which will later load out this formation of Dicalite.

• Because of the bulking characteristics of Dicalite, this 1½-cu. yd. dipper handles about 2 cu. yds. per pass.

When thin seams of overburden are stripped, or when restricted working quarters are encountered, shovel output necessarily drops, but this is one of the conditions of digging for valuable material. Some idea of the efficiency of a diesel engine can be gained from the fact that a drum of diesel fuel (50 gallons) is put aboard the 38-B every 2½ days. Since it operates eight hours per day, that amounts to 50 gallons for 20 hours of operation.

When shorter teeth are installed to replace the standard teeth now on the 38-B, the shovel will be better equipped to handle the fine and accurate work. The Sheets firm owns two older Bucyrus-Erie 37-B 1½-cu. yd. machines, which normally handle that part of the work. They cannot compete with the newer model in the heavier digging, and fall several hundred yards short of its performance when they do that work. A Lima 101, equipped with a 2-cu. yd. dipper, is also being used at the present time. Altogether, 14 GMC dump trucks are used.

The Dicalite rock is not hard enough to make blasting necessary; the crude Dicalite can be removed by any modern power shovel. The three older shovels use H&L short rock teeth on their dippers, and the material is just hard enough for the teeth marks to remain embedded in the face of the bank.

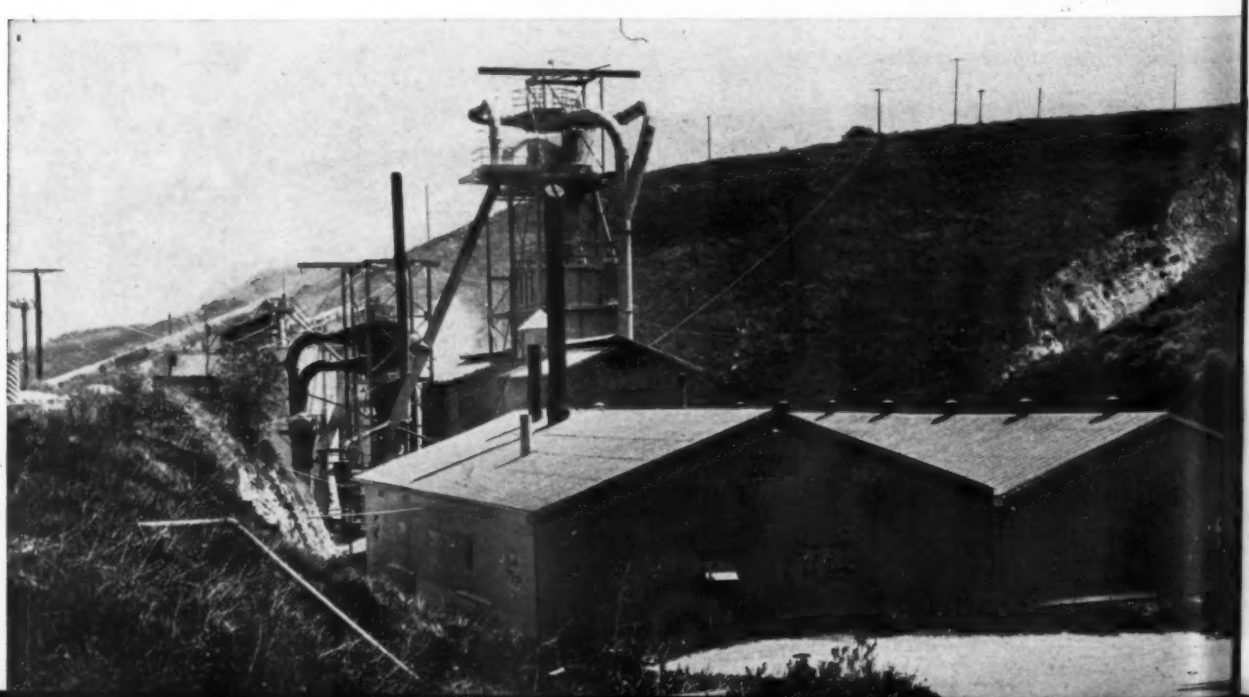
Two laborers work with each shovel when it strips overburden. This is necessary in order to get every bit of clay, rock, debris, and grass off the Dicalite, and leave the ledges clean. The men work with long handled shovels, and throw any loose debris left behind the shovel dipper up to a point where the operator can dig it with the bank. They also direct the shovel operator to raise or lower his grade.

The problem of how to maintain dump trucks has been a sore one all through the war years, because new ones could not be procured and the old ones were receiving hard use. The Sheets firm has a shop set up near the mill, where engine and transmission repairs are made, and bodies lubricated. Seven mechanics are employed there. The shovel operators and oilers do their own minor repair and lubrication jobs.

One of the serious drawbacks on this job is the twisting motion a truck frame is subject to when it travels under a full load over uneven terrain out to the main haul roads. Some of the older trucks were taken down and strengthened by adding members to the frames. One of the obsolete trucks was also put to work full time with a steel road drag, keeping the four miles of haul road smooth. The same truck driver who operates this drag also has a 2,400-gallon water tank mounted on a GMC truck, which he uses to sprinkle in conjunction with the dragging. It is his job to go over all the haul roads at least once a day and oftener if possible. Constant attention to the haul roads had reduced the cost of truck maintenance and repair appreciably, according to Excavation Superintendent Lyons.

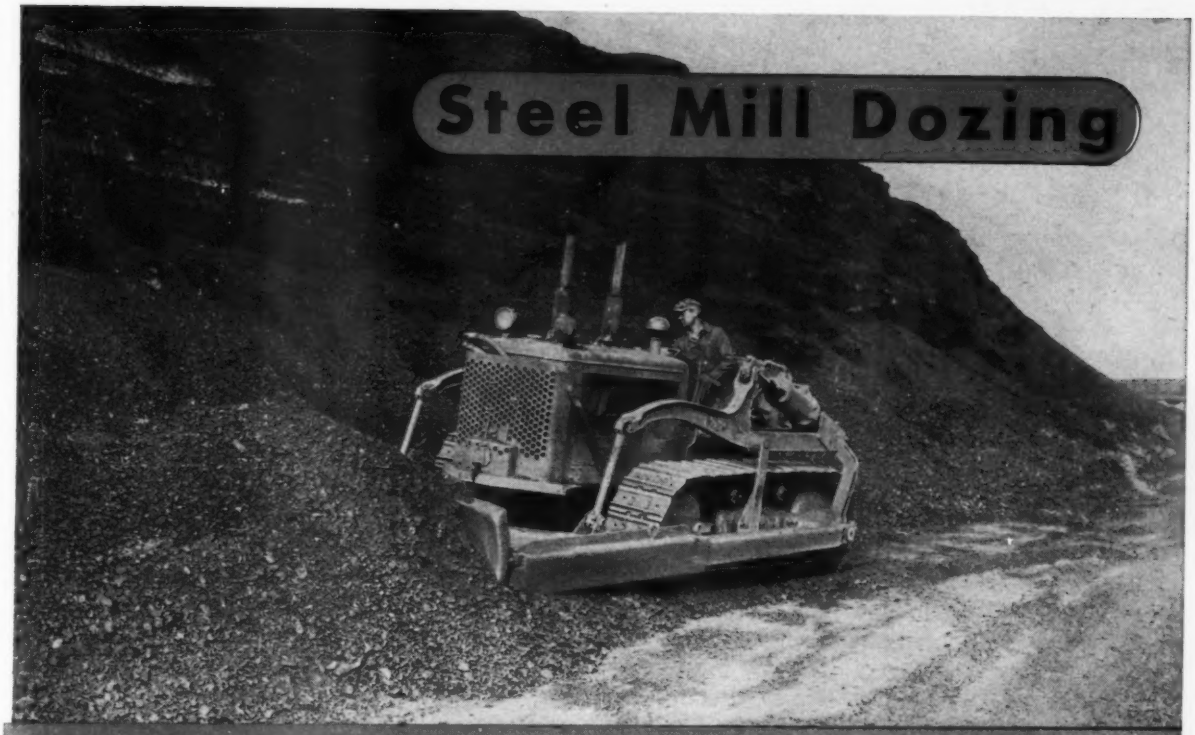
Two Allis-Chalmers and a Caterpillar tractor with Isaacson and Le Tourneau bulldozers are used for building new haul roads to the shovels, and for helping to remove overburden. They are a sort of in-between media, to take care of

(Continued on page 340)



• Plant where excavated diatomaceous silica is dried, ground to powder, and placed in paper bags for shipment under the trade name of Dicalite.

Steel Mill Dozing



• Above: Bucyrus-Erie Bullgrader works back and forth over big coal stockpile, packing it and squeezing out air pockets to reduce hazard of spontaneous combustion.

Dozer-equipped tractors facilitate steel mill production in handling materials to produce steel and get rid of refuse from the furnaces.

LARGE-SCALE OPERATION is a commonplace term in the production of steel. Not only is the finished product bulky and heavy, but so also are the ore and scrap from which it is made, the coal and coke used to produce it, and the materials, such as limestone, used to purify it. Even the refuse from the mills, such as slag, cinders, etc., is heavy and bulky and must be moved by the carload to enormous waste piles.

Powerful dozer-equipped crawler tractors greatly facilitate the movement of these bulky materials found in and around the modern steel mills.

The Colorado Fuel and Iron Corporation, at its big Pueblo, Colorado, plant, uses dozers on slag disposal and on stock-piling coal. The slag pile at this mill was started in 1917 and it is [illegible]

(Continued on page 340)

• Top: Buckeye dozer-equipped International tractor pushing 15-ton "button" taken from bottom of an open-hearth slag pot. Lower: Same dozer pushes slag dumped by [illegible]

The Oiler

Although his actual lubricating duties occupy only two or three hours on an ordinary shift, the oiler is a definite help in achieving efficient production of a power shovel, dragline, or crane, especially on the larger sizes, for he also has charge of safety around the machine, and as an assistant to the operator, is a second pair of hands and eyes that enable the operator to keep moving pay dirt.

By LEE DU BOIS
(Bucyrus-Erie Co. Service Engineer, Seattle, Wash.)

SO THAT A SHOVEL, crane or dragline may operate without the delays that occur when the operator must leave his seat to perform other duties, a second man is often placed on the crew to act as a second pair of hands and a second pair of eyes. In smooth-working organizations the operator and the second man must work as a team. Since the second man's most important duty is to lubricate the machine, he is commonly called an oiler. An oiler has three primary duties: lubrication, safety, and operator's assistant.

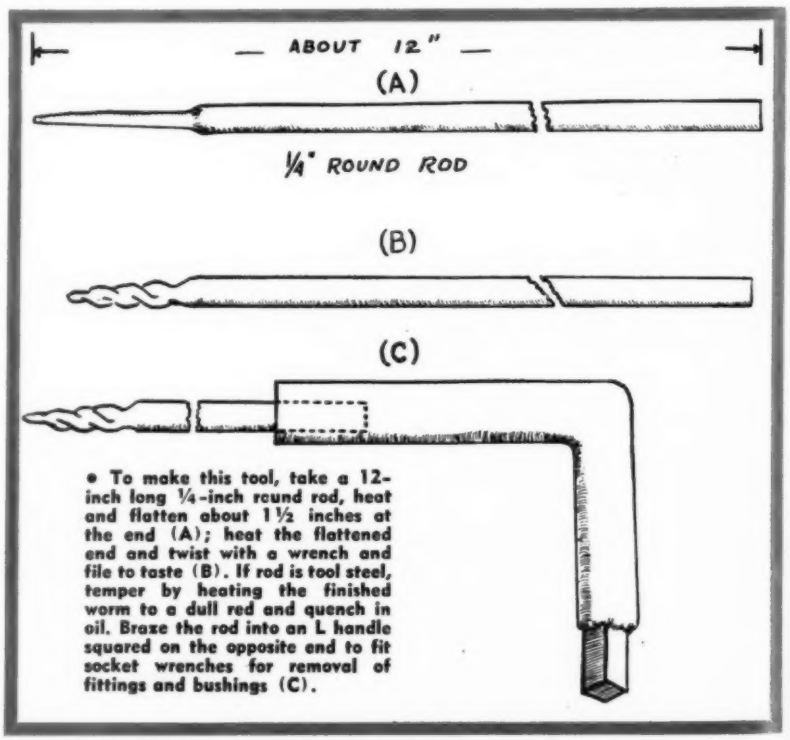
Lubrication

Lubrication falls into an almost automatic routine as the oiler follows schedules set up for him by manufacturers' lubrication charts. These charts cover the location of the fittings, information on where the lubricant goes from the fittings, the quantity and quality of lubricant to be used, and recommended frequency of lubricating the various parts. The oiler should discuss any variation from this routine and schedule with the operator.

The oiler thinks of his job of lubricating the machine in terms of assemblies, or groups of parts, which have a particular function in the operation of the machine. On the ground he has the crawler mounting, under the machine he has the propelling machinery, on the front end, the boom and dipper, or bucket, above the revolving deck, the hoist and swing machinery — each group has its place in the schedule; each group is serviced in a systematic order with a definite place to begin and finish so that no fittings are missed and no time or effort is wasted.

Lubricating a sleeve bearing

• A useful tool for the oiler is a worm, for cleaning out oil holes, combined with a wrench for the removal of fittings.



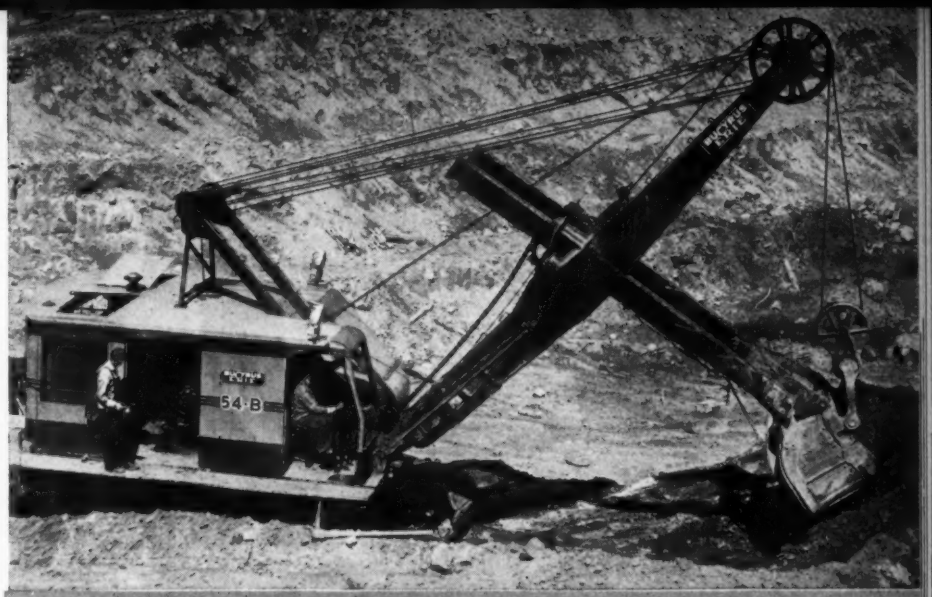
• To make this tool, take a 12-inch long ¼-inch round rod, heat and flatten about 1½ inches at the end (A); heat the flattened end and twist with a wrench and file to taste (B). If rod is tool steel, temper by heating the finished worm to a dull red and quench in oil. Braze the rod into an L handle squared on the opposite end to fit socket wrenches for removal of fittings and bushings (C).

really consists of two operations performed at one time, flushing the bearing of worn-out grease, grit, or particles of metal, and injecting fresh, clean lubricant. The operation is not complete if only more grease is added to the contents of a bearing. When the new, clean grease enters the fitting it forces out the abrasive materials which cause excessive wear. This generally appears as discolored grease. The oiler should take heed when fresh grease emerges as soon as the gun is applied to a fitting, for the grease may be short circuiting and neither flushing the bearing nor lubricating it properly. However, pressure must not be applied to anti-friction bearings.

If at any time a fitting refuses to take grease, investigate immediately. If the cause of trouble cannot be located, yell loud and long for help. Without lubrication there would soon be no machine and no machine, no job. The lubrication of a machine is a heavy responsibility. If you don't think so, just count up the number of mouths that are fed in the families of the men who depend on the output of that machine for a living.

Keeping a machine clean is part of the job which follows along with the servicing of grease fittings. If the flushed-out old grease is disposed of and the fitting wiped off at the same time, there will be less accumulation of dust and dirt. There is no better indication of the ability of an oiler than the general appearance of a machine. Each oiler works out his own system, devises his tools and has his own secret processes to produce the best results under the various conditions under which a machine must work in dust or mud. The basis of all secrets is that all grease and oil which is not serving a purpose must be removed. Some wash the film of oil off with solvent, automobile soap and hot water, and some use a steam cleaner at intervals. Some use automobile wax on cabs and machinery and the smart oiler generally has a couple of cans of paint hidden away.

There is a decided trend among manufacturers to use more anti-



• In addition to his lubricating duties (above) the oiler often spots hauling units (below) and keeps the loading space clear of rocks.

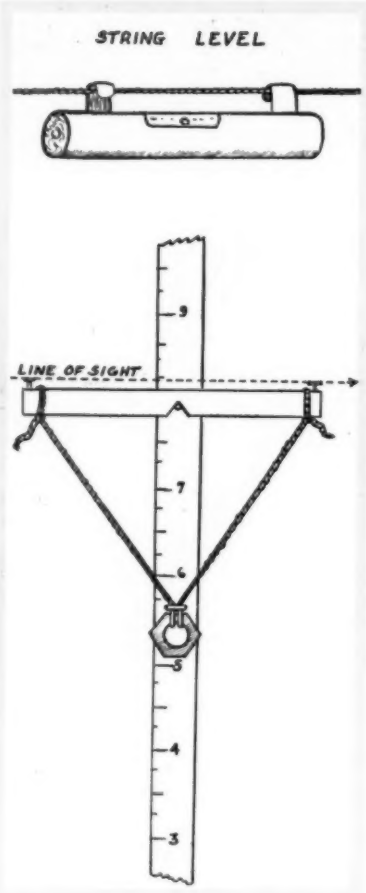
• Below: Keeping the shovel clean is part of the oiler's job. Some use automobile wax on cabs to keep them polished.

friction bearings of ball or roller types. These are generally sealed and are serviced with special grease at much longer intervals than open type bearings. Grease should never be forced into anti-friction bearings. Also, each year more gears are enclosed and run in oil. These improvements mean less of the oiler's time is taken up with greasing and cleaning. It does not follow that advances in machine design will crowd the second man on the machine crew out of the picture. The general efficiency of the operation of a job where the operator has the assistance of a helper is easily seen and recorded in the cost of operation.

Safety

The second duty of an oiler is to be a one-man safety patrol. Since the operator must concentrate his attention on handling the dipper, or bucket, much goes on around the machine which he cannot see. The oiler's first concern is his own safety. Nothing but alertness and experience can teach him how to avoid hazards. Moving machinery, rolling rocks, slippery footing, fire, water, and weather all play their part in making his job one where a man must be eternally on the watch. The one word which holds the most advice to an oiler is "think."

It is advisable that the operator discuss with his oiler how he will proceed with the work. From long association with the operator, the oiler knows what method or procedure will be followed in digging or loading material. The safety of men and equipment often depends on the good judgment of the man who is often in a position to interpret what is safe and what is dangerous. Many a slide has been truthfully predicted by the oiler who saw the first movement or heard the first trickle of small stones which preceded an avalanche.

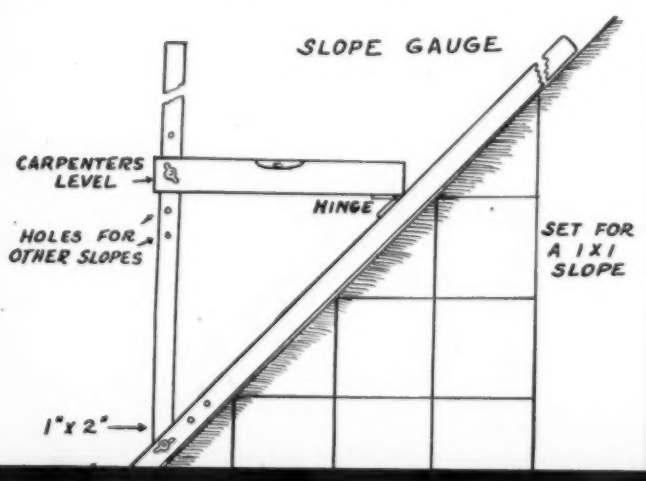


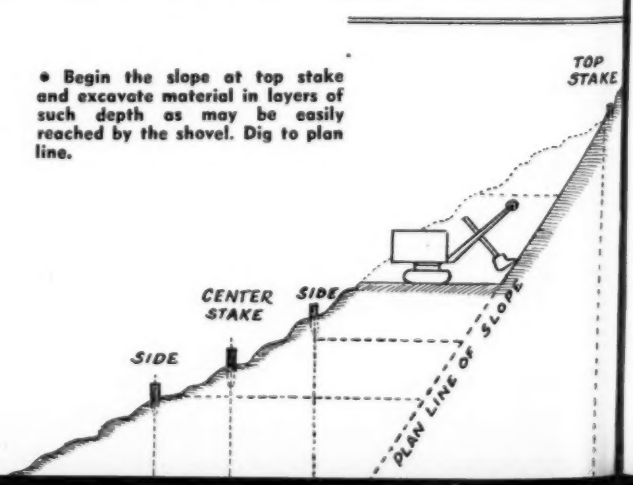
• In the absence of a standard string level, as shown in the top illustration, a stick balanced on a nail in a measuring pole, as illustrated, may be used as a substitute.

When a sculptor is about to begin work to produce a statue from a mountain of granite, he visualizes a living being held bound by a mass of rock which imprisons it. He regards it as his duty and privilege to release the prisoner without marring a single line or curve in the removal of the unsightly and resisting mass which surrounds it.

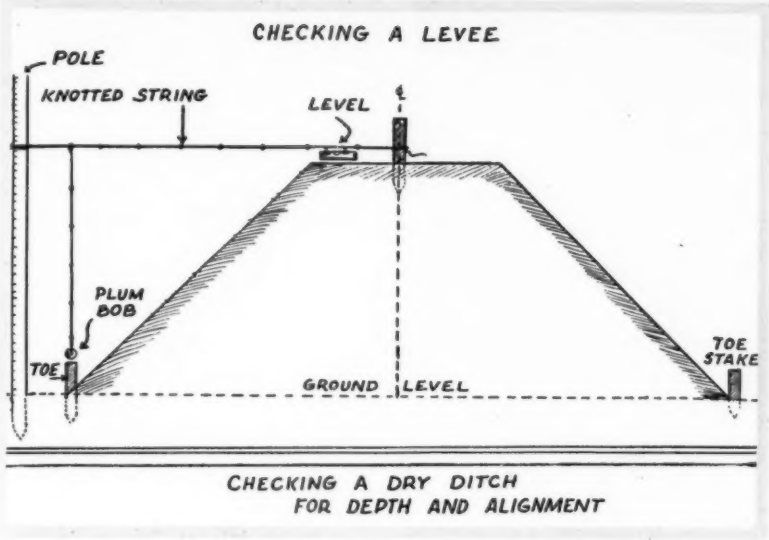
When an operator begins to dig a ditch, build a grade, or open a cut, he has much the same sort of picture of the completed job before him. If he is stripping overburden in an open pit mine, he has a definite objective to uncover a slope which has a precise location and exact dimensions. If he is loading hauling units, the picture shifts to the manner in which the load will be built up and how it will look when it leaves the machine. Without this ability to visualize a completed section of a job, the man is no operator.

The operator's chief concern is moving pay dirt, and rightly so. If his time is wholly occupied by operating the levers, any work connected with the job off the machine must be neglected or poorly done. No one knows better than the operator what aid he needs to follow line and grade. The experienced and skillful operator is the first one to state that he cannot go very far without measurements being taken and a check made. He is also the first to admit that the slick looking job behind him is due to close checking as much as his skillful handling of the excavator. The amount and type of checking required depend on the nature of the work. On some jobs this progressive checking is done by a man assigned solely for this purpose. On a great majority of jobs





• Begin the slope at top stake and excavate material in layers of such depth as may be easily reached by the shovel. Dig to plan line.



CHECKING A DRY DITCH FOR DEPTH AND ALIGNMENT

it can be done better by the oiler than by a man who is not a member of the machine crew. The oiler understands the problems involved and the requirements of the operator. He can do the checking without delay to the machine or the operation, mostly without assistance, and without complicating the safety problem of another man working where the action of machine operation is taking place and thus dividing the operator's attention from handling the machine.

By confining the digging and checking to these two men a more thorough understanding of the requirements of the completed job results in a higher class of workmanship and a more profitable operation than if the opinions of more men are involved. Most oilers provide themselves with a string level, a length of chalk line, and a six-foot folding rule which may be either divided in inches or tenths of a foot. If the line is knotted every six inches, it will serve for rough measurements as well as supporting the string level. A nut or a wrench will always answer for a plumb job. A long 2"x 2" stick marked off into feet and three-inch divisions with saw cuts should be on every machine. Many gadgets can be contrived to make the job of checking easy and accurate.

Establishing Offset Stakes

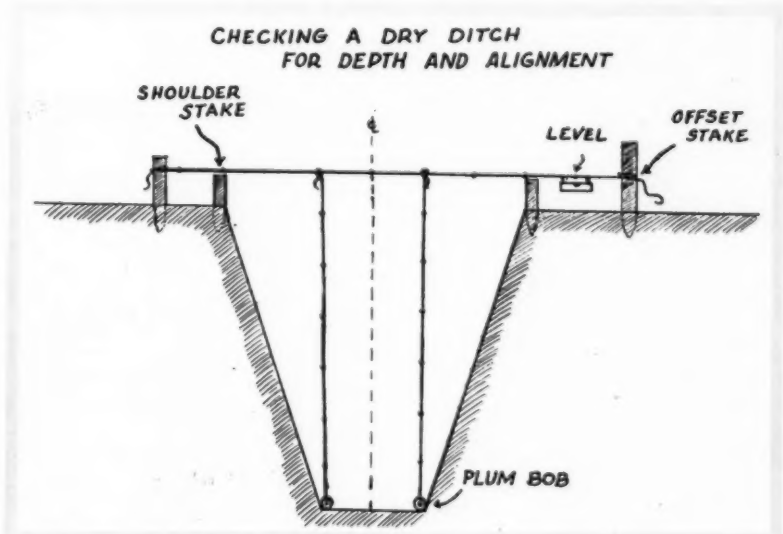
In ditch, levee and road work, and many other types of excavation work, three stakes are set at 100-foot intervals, or less. These are a center stake and one on each side of the excavation or fill. The center stake disappears during excavation, but the two side stakes should not be intentionally moved from their original position except on orders from the engineer in charge of the work.

The location of the side stake is the reference point from which all measurements are made in checking the progress of the work. There is always the possibility that these stakes may be accidentally moved. It is the oiler's duty to know the location of these stakes and to take the necessary precautions that a dependable measuring point be available. It is good practice for the oiler to set an additional stake near each side stake when it is in dirt or make his own "mark" in lieu of a stake when the job is in rock. To avoid complications he always offsets his own stakes the same distance from the original and transfers the figures from the original to his offset stake. If it is necessary to place the offset stake higher or lower than the original stake, he notes this difference in elevation on his own stake.

Slopes

In ditch work and all other forms of open cut work, a side stake locates the top of slope. The logical procedure is for excavation to begin here and progress down the slope to its toe and thus reach grade. It is important to keep the excavated slope line as planned so that no more additional work need be done on the slope than is absolutely necessary. If a slope gauge similar to the one illustrated is used in addition to making frequent measurements with string level and measuring pole, the operator can hold the slope close to plan.

In levee and fill work the side stake represents the toe of slope. Offset stakes are advisable here as in cut work. The same slope gauge and methods of measurement are used in checking the progress of the work as the fill is built up so that when the grade at the top is reached, little or no



• This operator is able to continue moving "pay dirt" while oiler greases the shovel.

additional work is necessary on the slopes of the fill.

It is generally poor policy to hog out yardage from the center of a cut and do the slopes last just as it is poor policy to build the center of a fill first and the slopes last.

Working from a Base Line

In some types of work it is practically impossible to set any stakes at the locations desired. In such cases all measurements are made from a base line established outside the actual location of the work. Transferring measurements from a base line over to the location to be excavated is usually too complicated a job for an oiler to attempt. But, it is wise to keep informed when it is done so that he may avail himself of the information as soon as possible.

Locating the Center Line

The movement of yardage which does not produce a slope, line or a grade line holds little interest for the skillful machine crew. They are content to handle thousands of yards of material out of the central mass in order to have the privilege of moving the one yard which bears upon the finish line. This is because the job then bears the trade mark of individual skill. It is immaterial whether this line is in a borrow pit, a stock pile, ditch bottom, highway grade, or the well balanced loads on hauling equipment.

It is most important to remember that checking be done before the machine is moved in order to correct errors or any tendencies to stray from line and grade.

It is often a great help to the operator to have temporary stakes set up locating the center line as well as stakes indicating the location of the slope line. It may be necessary for the oiler to measure and check these temporary working points several times a shift. By careful measurements checked and re-checked, the oiler can establish his own bench marks from which these points can be located without going to the trouble of repeatedly climbing all over the excavation.

Using Water Gauges in Ditch Work

On ditch work it is a simple method to use the level of water in a ditch as guide for toe of slope alignment as well as the depth of the ditch because still water is always level. Ordinarily a few tenths of a foot variation in the bottom of a ditch does no harm providing the variations are all below grade line. A ditch is planned with a definite amount of "fall" in its bottom to insure the water running in the right direction. Where water is present in the ditch both new work and clean-out work is done by the machine traveling up the ditch so that the water can drain away. Consequently, the work begins at the outlet. It is always wise to lower the outlet below grade slightly beyond the actual outlet

(Continued on page 339)

• This oiler is coiling the cable on a sled pulled by this electric shovel.

● Inexperienced crew makes road across bog only under shoes and without foundation for tub, so this Bucyrus-Monighan sank into soft wet bog. With help of Ruston-Bucyrus bulldozer at right machine was later walked out. Inset is closeup of bogged dragline.

Bogged

Describe method of freeing Bucyrus-Monighan dragline that was shipped to British Isles under lend lease to increase Allied coal production and sunk in rain-soaked Scottish bog by inexperienced crew attempting to walk it across country.

DURING THE WAR American coal mining machinery, including stripping machines, was sent to Great Britain to increase coal production to ease allied fuel shortages. With the excavators sent to England was a Bucyrus-Monighan 6-W walking dragline with a 4-cu. yd. bucket on a 150-ft. boom.

Early in July, 1945, under the jurisdiction of the Department of Open Cast Coal, Ministry of Fuel and Power. this machine was scheduled to walk approximately ten miles from Bogside to Kelty, Scotland.

Owing to the irregular terrain and an inexperienced crew, the walk became a test for man and machine. Seven miles of the course had been covered in three weeks when a bog was encountered. The almost daily rains, draining off the surrounding hillsides had saturated the ground for a distance of about 300 ft. A road, under the shoes only, was prepared with coarse rock, gravel, concrete posts and railroad ties. With the shoes supported and no foundation for the tub to rest on, the machine sank rapidly with each succeeding step.

To counteract this condition, additional men and material were provided. The shoes were raised to the highest level and concrete posts pyramided under, in an attempt to raise the tub. This brought the entire weight on the cam and the engine was unable to lift the total weight the several feet required. With each attempt, the engine stopped, and the machine was permitted to slide back with such force, the fairlead was completely buried and muck poured in on the floor. More ties and posts were piled under the shoes as the weight of the machine forced them into the soft ground.

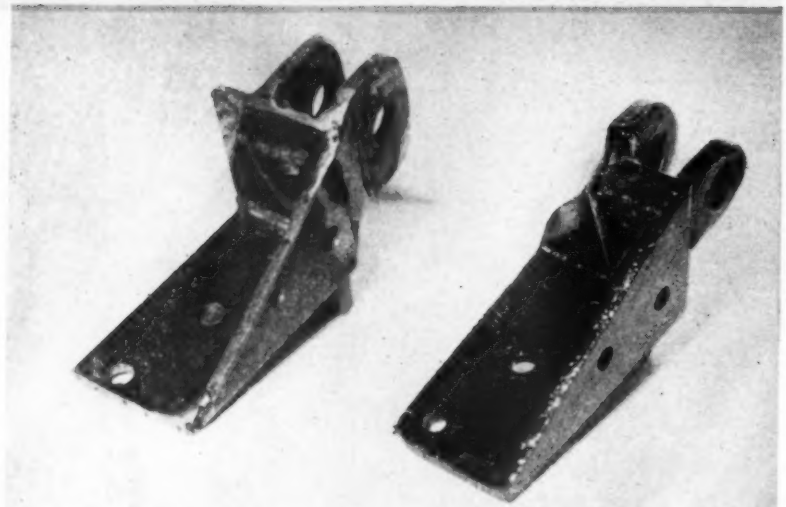
After several days, failing to extricate the machine, an appeal was made to Grafe-Callahan Construction Company for workmen. Under the direction of T. G. Rivers, this firm, for the last two years of the war had a crew of 200 men erecting more than 260 excavators of various makes furnished by Lend Lease, to increase coal production in Great Britain. Bill Sund, George Walters, Allen Benefield, and Wm. H. Max under Berlin Taylor, erecting foreman, were selected and, in less than two days, the machine was out and walking on firm ground. Practically all this time was consumed in properly preparing the ground.

Surplus ties and posts were removed from beneath the shoes to allow suitable walking conditions. Dirt was dug from below the tub to permit a natural walking position. A two-part line, attached to the tub was anchored to the only available tree, 1500 feet away. To aid in stringing the lines, a small Ruston-Bucyrus bulldozer mounted on a TD-6 International tractor was utilized.

With the cable attached to the

(Continued on page 340)

Field NOTES



Redesigned Tailgate Hinge

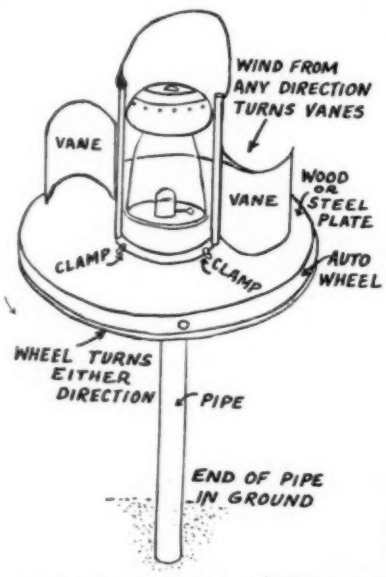
Robert J. Blee, garage foreman in Pennsylvania, was confronted with the problem of keeping a fleet of dump trucks in operation and due to the terrific pounding and shock these dump truck bodies took from the power shovel, the tailgate hinge brackets of malleable casting were continually breaking.

A dump truck body without a tailgate is useless in quarry work and the problem had to be solved as the garage supply of malleable cast hinges dwindled to nothing. Change to welded design solved the problem and the hinge brackets were welded from 3″x3″x⅜″ angle iron that was cut to six-inch lengths. The metal burned off in shaping the bracket was used for gussets and hinge pin eyes. Since scrap metal was used to make these brackets, the only cost was the electrodes used and labor. A good stock of these hinges was made in spare time and the malleable castings were replaced as they failed.

Courtesy The Hobart Brothers Company

Danger Signal Flasher

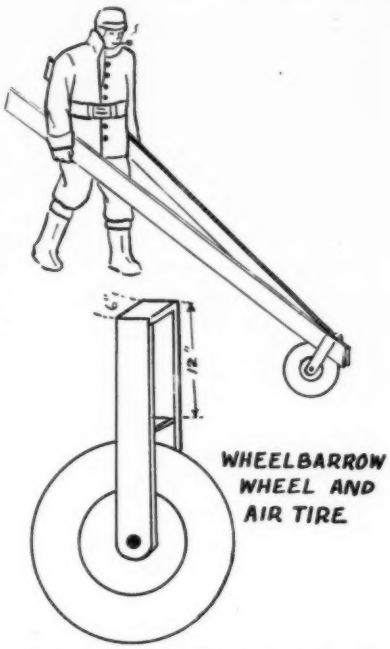
A danger signal to mark excavations, obstructions, etc. that will flash and more easily catch the eye of motorists or passersby at night, can be made in the following manner. A turntable is made for the flasher by welding a spindle from an old auto to a pipe and attaching a discarded auto wheel to the spindle. The top of the wheel may be covered with sheet metal or boards to provide a solid base for the mounting of the lantern which is clamped in the center of the turntable. To the sides of the lantern, oppositely curved vanes of tin are soldered. The vanes will catch breezes blowing from any direction and as the lantern turns, the vanes will momentarily cut off the lantern from view producing a flashing effect.



• Vanes attached to lantern turntable swing in the breeze to make a flashing danger signal.

Timber Dolly

A simple and easily-made contrivance for moving and handling boards or planking is the Timber Dolly. Construction is very elementary. Secure a wheelbarrow wheel and an air tire that the wheel will fit snugly inside. The frame should be built 12″ x 6″ and high enough above the axle to allow ample clearance for the wheel when the dolly is loaded. When constructed, it takes just a moment to insert the ends of several boards or two planks through the opening in the dolly and the worker is able to pick up the opposite ends of the lumber, divide the stock in wheelbarrow handle fashion, and push it to any place it is desired.



• One man can do the work of two with this easily made timber dolly.

WILLIAM P. HOUSER.

Waterproofing Dynamite Caps

However well a dynamite cap is fastened to the fuse by the crimper, it is almost impossible to make a joint that will prevent water from leaking in and spoiling the cap and causing a misfire. For wet work it is necessary that the space between the shell of the cap and

(Continued on page 304)

J&L Wire Rope is made with precision by skilled men with the same patient attention to detail, the same insistence upon quality material, as the best hand-made match piece.

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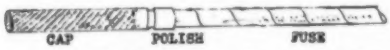
Field Notes

(Continued from page 302)

the fuse which is inserted in the cap be made watertight.

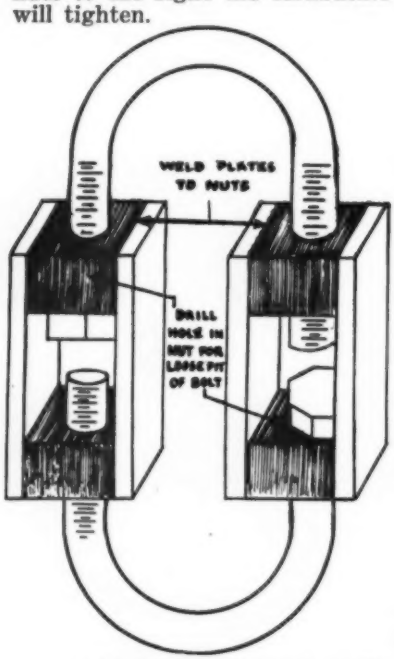
Cap-sealing compounds are on the market, which require about 30 minutes to dry before cap and fuse can be used. A quicker and handier method is to use fingernail polish. The polish costs but a dime, comes in a handy bottle with a brush, and one bottle will seal about 50 caps. Water will not penetrate inside the cap sealed with nail polish for about 48 hours. The polish sets within but five minutes and the cap and fuse are ready for use. One coat of polish will do the trick.



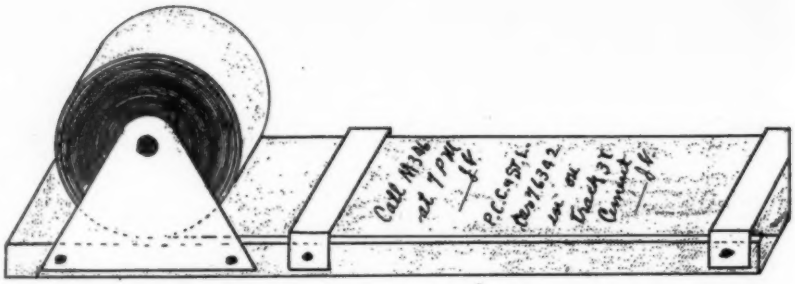
• Nail polish makes fast drying waterproof sealer.

Easily-made Turnbuckle

A turnbuckle that works with either rope, cable, or chain can be quickly made in any shop from junk parts. Two right hand thread bolts are bent into U-shapes. Strap iron plates are welded to opposite sides of two square nuts for each side of the turnbuckle after the U-shaped bolts have been inserted through the square nuts. Be sure to provide a large enough hole for head end of bolt so that nut can be turned freely. By turning both nuts to the right the turnbuckle will tighten.



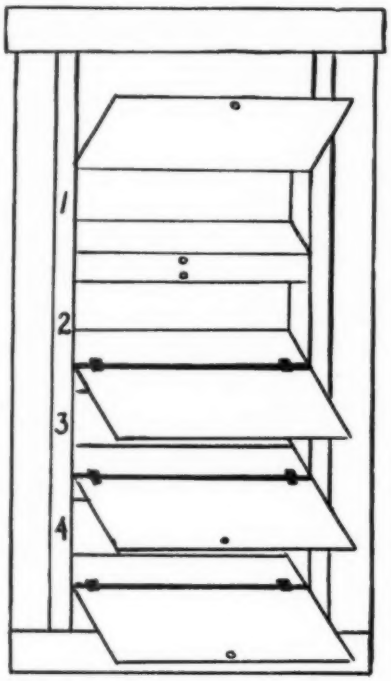
• Turnbuckle that can be easily made in any shop since no left hand threads are used.



• A telephone pad is not much good if it is not near the telephone when needed. A short piece of board, some thin metal strips, brads, and a roll of adding machine paper will make a pad that will be near the phone when needed.

Field Office Service Window

A service window installed in a field office can in many cases eliminate as much as 60% of office traffic. The window is simply partitioned off into separate lockers



• Service windows can also cut down lounging in the office.

with each foreman being given a lock and key for his own box. Orders, time books, blue prints, and all necessary business papers can be placed in the various boxes by the inside office personnel and only the individual concerned has access to them. It is possible for the office to be closed and still allow business to proceed as usual.

Safety Block

An aluminum safety block is now on the market which can be installed on the bed of a truck to keep the body from descending on anyone working under it. The block is hinged to the truck frame and is out of the way when not in use.

Accident Statistics

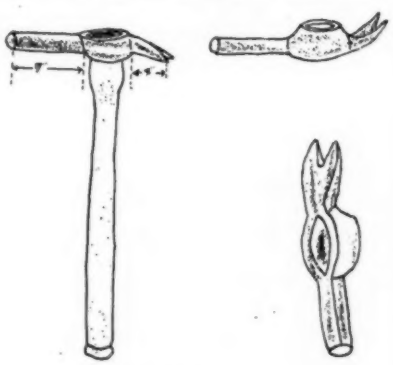
The Bureau of Reclamation's 1942 accident records provide these figures:

Type of Work	Frequency Rate	Severity Rate
Tunnels	166.75	2.89
Concrete Dams	77.50	5.28
Earth Dams	36.92	9.52

Old Pick Makes Handy Tool

Light duty track workers will welcome this all-round handy tool that can be made from an old pick. A pick head is shaped as a long-headed hammer on one end and as a claw on the other end.

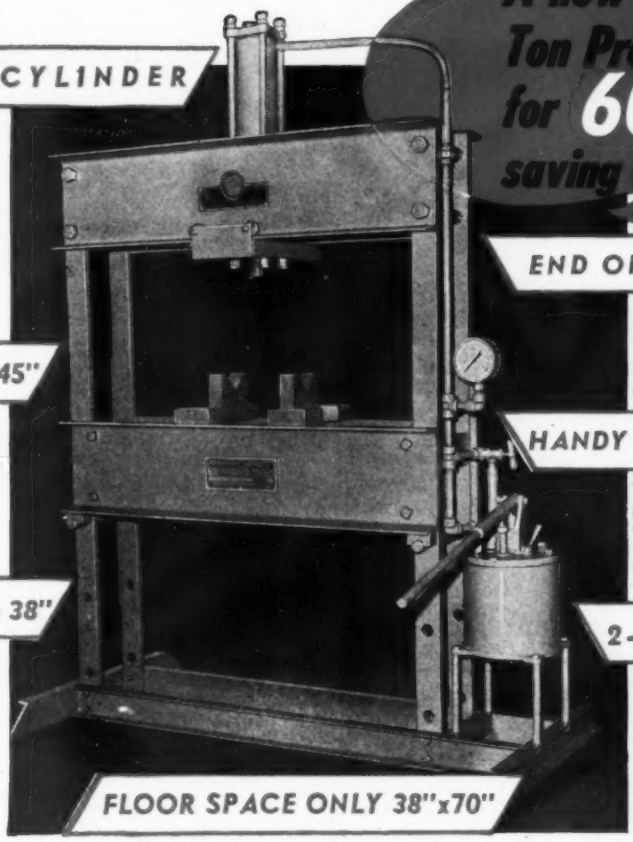
The claw end on the tool can be used for pulling spikes, lifting rails to remove and replace rail plates, lifting ties for tamping underneath, and to put lifters under ends of ties. The maul end of the tool can be used for tamping. Many more uses, too numerous to mention can be found for this tool.



• A tool of many uses can be made from an old pick head.

RODGERS "Sixty" SHOP PRESS

A new 60 Ton Press . . . for 60 time-saving uses



MOVEABLE CYLINDER

Cylinder is adjustable completely across top bolster—mounted on four rollers that ride on the bolster channel. Ram travel 2½" per stroke of pump. Cylinder detaches from press and with added hose may be used as a jack, clamp or press in any position.

WIDE WIDTH — 45"

Working space on bolsters (45") permits the entrance of large gears, wheels or pulleys. 10" opening between front and back bolster.

ADJUSTABLE 8" to 38"

Working daylight between top and lower bolster adjustable from 8" minimum to 38" maximum. Bolster is raised and lowered by a hand crank.

END OPENING — 8"

Long work may be slid through either end of the press without encountering any obstructions. The opening between the columns is a full 8".

HANDY VALVE & GAUGE

The hydraulic gauge marked in pounds and tons and the quick opening valve are located at the right side of the press, above the hydraulic pump, for convenience of the operator.

2-SPEED PUMP

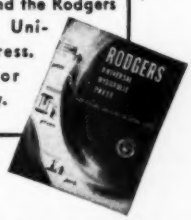
2-Speed pump, sturdy and simple, self lubricating, needs no attention. Ram moves 2½" each stroke of pump when pump is set for high speed—giving up to 2,000 lbs. pressure in rapid travel. Flip of lever changes pump to high pressure.

FLOOR SPACE ONLY 38"x70"

The "Sixty" requires small amount of floor space, only 38" x 70". Performs many operations such as: pressing, straightening, bending, shearing, clamping, broaching, riveting and assembly work.

THE Rodgers Model "Sixty" 60 ton Shop Press is ideal for machine shops, tool rooms, garages, tractor or farm service stations, highway repair shops and repair plants or many industrial projects — you will find that one or more in your shop is a good investment that will pay dividends quickly. It is also available in a special size with a daylight opening from 8" to 48".

OTHER RODGERS PRESSES . . . are described in this catalog. Included are the Rodgers 100 ton and 150 ton Shop Presses, and the Rodgers Portable Universal Press. Write for your copy.



Write or wire today for complete details.

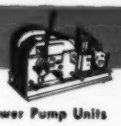
Rodgers Hydraulic, Inc.

HYDRAULIC POWER EQUIPMENT

Shop Presses

Crawler-Track Presses

7417 Walker St., St. Louis Park, Minneapolis 16, Minn.


Power Pump Units

Portable Presses

Equipment you ought to KNOW ABOUT

For further details about the equipment on these pages please write to the manufacturer, mentioning Excavating Engineer.

Concrete Mixer

Manufacturer: Kwik-Mix Company, Port Washington, Wis.

Claims: A new 11-S Kwik-Mix Dandie concrete mixer is one of the entirely redesigned line of Kwik-Mix Dandie Mixers, which also includes new 6-S and 16-S sizes.

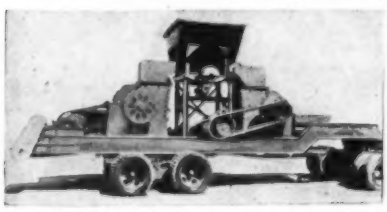
The new 11-S model follows the general design of the previously announced Dandie Mixers. Tilted flowline discharge chute, selective skip shaker and the Kwik-Mix remixing drum are included. High strength steel is used at all points of wear.

The 11-S has a rated capacity of 11 cu. ft. of mixed concrete plus 10% and complies with A.-G.C. specifications. The machine will be furnished either on four wheels with side or end discharge, or on two wheels with end discharge.

Pulverizer Portable Aglime Plant

Manufacturer: Universal Engineering Corp., Cedar Rapids, Iowa.

Claims: A new portable pulverizing unit for fast, large scale, aglime production consists of feed hopper with mechanical plate feeder that feeds material uniformly to the two Universal Pulverizers which are mounted on the chassis.



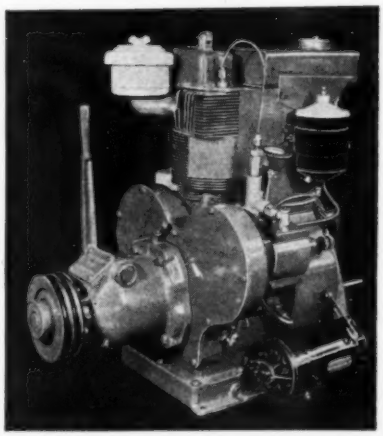
Dodge 'Power-Wagon'

Manufacturer: Chrysler Corporation, Detroit, Michigan.

Claims: A sturdy full-size, four wheel drive, one-ton general purpose truck designed both for economical "off-the-highway" use and operations over unimproved roads. It was adapted from the four-wheel drive Dodge military vehicle. It has a 94-horsepower engine, four-speed transmission, two-speed transfer case, a conventional closed cab with built-in driver comfort, a steel express body 8 feet long, 4½ feet wide and 22¼ inches high with special reinforced stake pockets, a double-

drop frame with side rail reinforcements, 126-inch wheelbase and choice of 9.00/16 or 7.50/16 eight-ply tires. It is designed for a maximum payload of 3,000 pounds with 9.00/16 tires.

A dual power take-off is available to deliver 536 rpm at the tail shaft to operate many types of machinery or drive a nine-inch diameter belt pulley drive to power many items of auxiliary equipment at a belt speed of 3,124 feet per minute. The power takeoff also operates a front-mounted power winch of 7500-pound capacity.



Air-cooled Diesel Engine

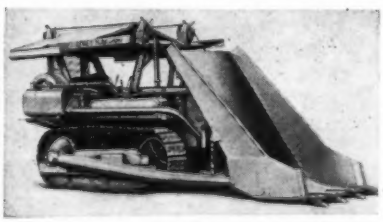
Manufacturer: R. H. Sheppard Company, Hanover, Pa.

Claims: Engine is smallest diesel ever built for commercial use and is only stationary diesel that is air-cooled. The air-cooling is so efficient that a hand can be laid on the cylinder without discomfort while the engine is operating at full load. Equipped with both hand and 12-volt electric starting, the engine may be used for powering communicating systems, auxiliary lighting plants, pumps and other types of power driven equipment.

Model W4-5 Mobiloader

Manufacturer: Athey Products Corporation, Chicago.

Claims: Mobiloader incorporates a new and exclusive application of hydraulics with a single finger tip control that results in the instant response of the full



power of the tractor, eliminating fatigue and increasing load efficiency. Improved design results in greater visibility and stream-

(Continued on page 335)

Meet the "IRON QUINTS"

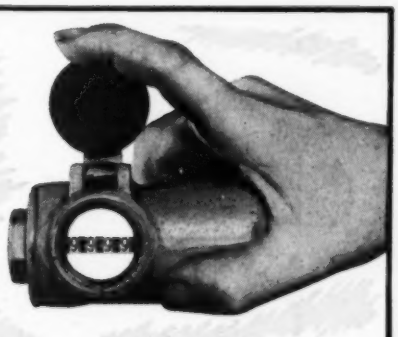
FIVE "Caterpillar" Diesel D8 Tractors started stripping anthracite coal at Plymouth, Pa., in the fall and winter of 1941. Up to March 15, 1946, the work records of the five machines, taken direct from their hour-meters, were as follows:

D8	1H9384	21,159 hours
D8	1H9236	21,733 hours
D8	1H9930	20,936 hours
D8	8R134	20,717 hours
D8	1H9730	22,485 hours

That adds up to a total of 107,030 hours of the toughest kind of work—ripping and bulldozing rocky overburden—loading and hauling 30-yard scrapers—climbing stiff grades—running in gritty mud and on slippery shale. Together, at a low estimate, the five units have moved 5,000,000 yards of earth and rock!

In the words of Paul Goddard, General Superintendent for Carey, Baxter & Kennedy, Inc., the owners—*"There's just nothing to compare a D8 with!"*

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



Why does "Caterpillar" put an hour-meter on all its engines? Because the men who build those "Caterpillar" Diesels are willing to back the long life of their product against all comers.

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

HELPS
SPEED UP
WORK-PROGRESS
ON RUSH JOBS!

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation of Califor

Contractors! Learn how Complete Lubrication Service helps you beat time estimates on Jobs!

Question: **Are machine breakdowns disrupting tight work schedules . . . slowing work output?**

Answer: Call in Socony-Vacuum! We'll help you avoid equipment failures—speed operations—boost output—with exactly the *right* oil or grease for every part of every machine at work! Whatever your needs, you can now fill them from a *single* convenient source.

Question: **Looking for a way to cut down maintenance time *without* impairing machine efficiency?**

Answer: Rely on Socony-Vacuum! Our Representative supplies you with latest job-tested maintenance schedules—helps your men adapt them to your individual needs. He can also instruct "green" help on *where, when and how* to lubricate all your machines.

Question: **Are you refueling and lubricating equipment the hard way—losing valuable time out on the job?**

Answer: Rely on Socony-Vacuum! Our on-the-job delivery service minimizes field interruptions, reduces inventory problems, saves office time. No more bother with special orders, follow-ups, extra bookkeeping.

Question: **Is "problem" equipment delaying vital operations . . . stopping the work of your entire plant?**

Answer: Consult Socony-Vacuum! Here again, our Representative can save you time—give your men practical help—call in special lubrication engineers when necessary.

Why Be Satisfied Merely With "Gas and Oil" When You Can Get Complete Service!

Tune in "Information Please"—Monday Evenings, 9:30 E. D. T.—NBC

Shots from the FIRING LINE

See "Spot" Sale of Surplus Equipment Regular Policy

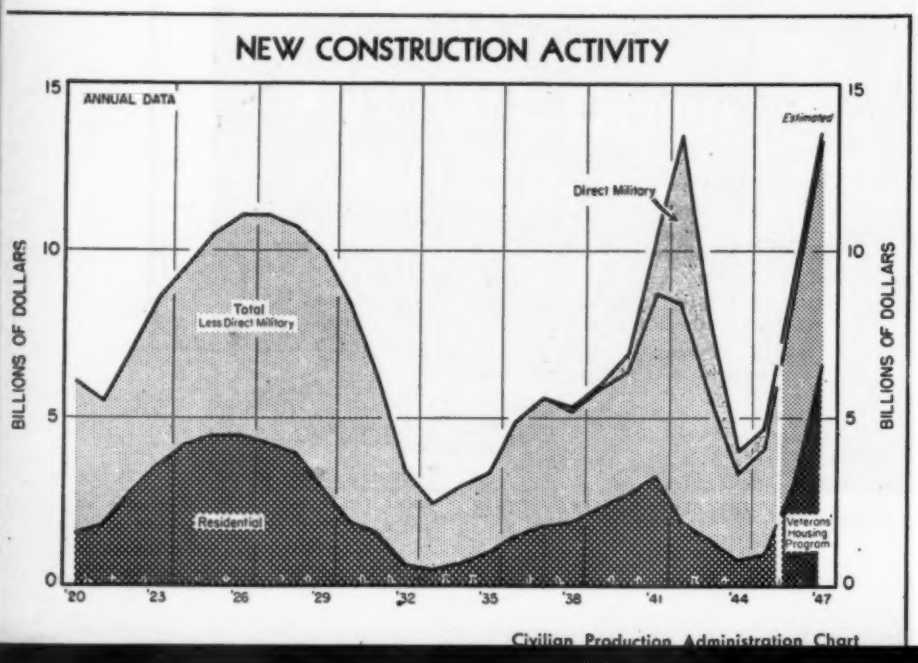
That "spot" instead of "site" sale of war surplus heavy construction and roadbuilding machinery will probably be maintained as the permanent War Assets Administration sales policy for this type of surplus, is the belief of industry representatives and observers who have been paying close attention to the various sales and disposal techniques pursued by the various agencies entrusted with surplus disposal from the days of Treasury Procurement activity, through the Surplus Property Board and Department of Commerce days, up to the present War Assets Administration, headed by Lt. Gen. E. B. Gregory.

Members of the Committee on Disposal of Government Surplus of Associated Equipment Distributors, A. E. D., headed by Ed P. Phillips, of the Phillips Machinery Company, of Richmond, Virginia, held a series of conferences with General Gregory and his aides to discuss the viewpoint and problems of those responsible for distribution of the heavy construction and roadbuilding machinery, in relation to disposal of the hundreds of millions of dollars worth of equipment in this classification yet to be sold as surplus.

Members of the committee were impressed with the realistic manner in which the new War Assets Corporation, as one member put it, "seems to be getting down to brass tacks on this surplus property business, at long last." A. E. D. members emphasized to WAA officials that "spot" sales of such machinery afford a more equitable and widespread distribution of surplus construction machinery with a program based upon a monthly cycle of operations, than "site" sales which are limited largely to local distribution and hinder participation of many buyers in other parts of the country. At the time WAA spokesmen indicated that it was "the present policy" to exclude construction machinery from "site" sales, and A. E. D. officials feel that since no word indicating likelihood of change of policy has emanated from WAA up to now, and since the "spot" method of disposal is approved by the majority of dealers over the country, the industry may anticipate its being followed until all such surplus has been disposed of.

The apparent willingness of General Gregory and his staff "to listen to and accept the recommendations of the industries actually affected by the method of disposal of multi-million dollars worth of surplus consumer goods, at least insofar as the construction machinery industry is concerned," is hailed by Frank B. McBath, of the Columbia Equipment Company, Portland, Oregon, President of A. E. D. "as one of the most refreshing and enheartening governmental developments of recent years.

"It is more than encouraging to find that the War Assets Administration is grappling with the problem of surplus property disposal in realistic fashion, and in a manner that bespeaks a sincere desire to work with and not against the industries affected by the innumerable classifications of consumer goods involved. It is a bigger problem than is generally recognized, and the job being done well has a much more important relationship to the national economy than generally seems to be realized. That is why the attitude of General Gregory, and the staff with which he has surrounded himself, is most gratifying to members of Associated Equipment Distributors. I am assuming, naturally, that War Assets thinking is and will be as realistic for other industries as it is for ours."



Civilian Production Administration Chart

Hold A.G.C. Meeting in Denver, June 29 to July 2

The Spring Meeting of the Governing and Advisory Boards of The Associated General Contractors of America will be held at the Shirley-Savoy Hotel, Denver, Colorado, from June 29 to July 2, 1946, Managing Director H. E. Foreman announces.

Meetings of the Boards will be held Monday and Tuesday, July 1 and 2. A meeting of the A.G.C. Secretaries' Council will be held Sunday, June 30. Committee meetings will be held Saturday, June 29, and Sunday, June 30.

The two A.G.C. Colorado chapters, with headquarters in Denver, who will assist in arrangements are the Colorado Contractors Association, of which R. J. Lawrence is president, and Earle W. Devalon is managing director; and the Colorado Building Chapter, of which Roger B. Mead is president and E. B. Tarpley is executive secretary.

Award Sand and Gravel Contract on Big Thompson

A $99,000 contract for processing sand and gravel to be used in concrete work on the Colorado-Big Thompson project has been authorized for award to the Schmidt Construction Company of Kremmling, Colorado.

The contract calls for delivery of 70,000 cu. yds. of sand and gravel from a deposit near the eastern edge of Estes Park. The material will be stock-piled and used in the construction of portals and for concrete lining on Rams Horn and Prospect Mountain tunnels. These tunnels, each slightly more than a mile in length, are being built by the Bureau of Reclamation as part of the irrigation and power facilities on the Colorado-Big Thompson project in northern Colorado.

A $1,864,822 contract for construction of the two tunnels was recently authorized for award by Secretary of the Interior J. A. Krug and work on them will get underway shortly. These tunnels are a part of the canal system to carry water from the eastern outlet of the Alva B. Adams tunnel to the Marys Lake and Estes hydroelectric plants.

Lining work on the Adams tunnel

(Continued on page 314)

He tortures wire to give YOU a better rope

This Macwhyte laboratory technician is working in *your* interest. He gives the strength test to samples from each end of every coil of wire we make. Each sample is stretched to the breaking point. If it passes the test, the coil is tagged OK and used for Macwhyte Wire Rope. If not up to standard, the wire is rejected.

To make sure Macwhyte Rope will give you maximum service, the finished wire is also given a torsion or twist test to check its stamina. Granular structure is analyzed by a microscopic camera. Wire samples are rotated in an arc by a special machine that checks their ability to withstand fatigue.

Strict metallurgical control is another reason you can always depend on Macwhyte Wire Rope for long, economical life.

Make MACWHYTE your headquarters for WIRE ROPE and SLINGS

Macwhyte Wire Rope Catalog, G-15. 170 pages. Lists Macwhyte's full line, gives complete manufacturing story. Ask any Macwhyte representative or write Macwhyte Company.

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Distributors throughout the U. S. A. and other countries

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MACWHYTE PREformed and Non-PREformed Wire Ropes—
Internally Lubricated . . . MONARCH WHYTE STRAND
Wire Rope . . . Special Traction Elevator Rope . . .
Braided Wire Rope Slings . . . Aircraft Cables,
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Monel Metal Wire Rope, Galvanized Wire Rope.

MACWHYTE COMPANY 50th Year 1896 – 1946

NO. 899

Round the World...

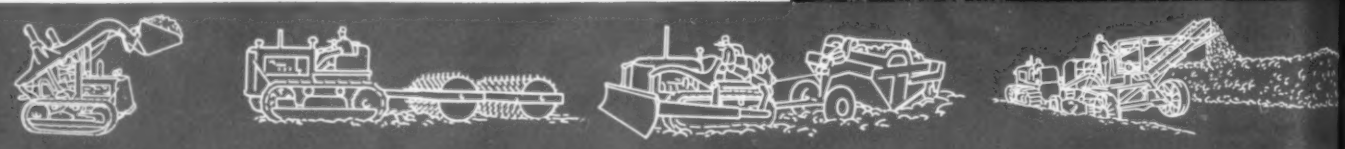
The Best Combination—

In any locality it's International Tractors and *the finest* of matched earth-moving equipment that proves to be the best combination for profitable operations. • International Crawler Tractors deliver more engine horsepower to the tracks through generous use of roller bearings and ball bearings in power transmission and drive shaft assemblies. • International Diesel Tractors start easily and instantly in any weather yet deliver *full Diesel* economy in their effective use of low cost fuel. • International's advanced engineering adds other marked advantages which only International Tractors provide to keep maintenance at a minimum and to assure peak performance under all conditions at all times. • Construction gains momentum under the driving power of International Industrial Tractors and Engines. • Seabees

Above: It's a TD-18 TracTracTor cutting out a roadway on a hillside with a bullgrader blade. Wherever roads are built, Internationals speed the job, help keep costs down to bedrock.

Opposite Page: An International TD-9, with bullgrader and 2-wheel scraper, builds an addition to an airport in a resort community. Fast worker! It averaged a yard per minute on 100-ft. hauls at a cost for fuel of $1.43 per 9-hour shift.

At Right: This International TD-18, grading for a new building, has a loaded uphill job which its power-packed, *full-Diesel* engine handles easily.



INTERNATIONAL Tractors

Speed up Construction at New Low Cost

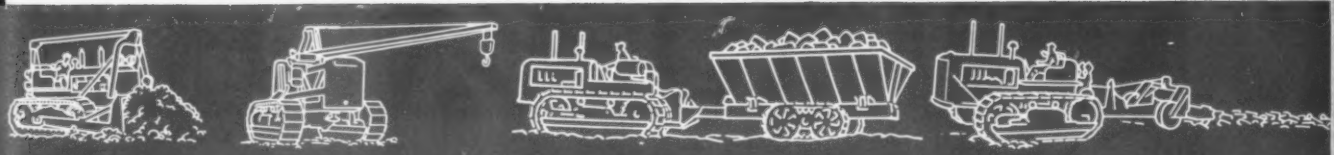
and Marines used them on the beaches wherever they landed and for airstrip construction. They proved the stamina of Internationals 'round the world and showed with what speed construction could be completed. • And contractors everywhere are today enjoying the new low costs which International's economical use of fuel and oil and manpower makes possible. • Check with the nearest International Industrial Power Distributor the many outstanding features of International Tractors—Diesel or gasoline—and profit by the use of International Power on the many important projects you're planning.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue • Chicago 1, Illinois

INTERNATIONAL Industrial Power



This name on a reel — means

TOUGH WIRE ROPE

For rugged, long-lasting wire rope be sure it bears the name Wickwire Spencer. Every step in the making of Wickwire Rope is under constant, careful control, from the special formulae used in making the steel, through processing of the wire until it is exact within a fraction of a thousandth of an inch, through laying of the strands and final closing.

Order Wickwire Spencer Wire Rope and be assured of the utmost in performance, safety and long rope life. It is available in all sizes and constructions—both regular lay and WISSCOLAY *Pre*formed.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS . . .

Thousands of wire rope users—old hands and new—have found "Know Your Ropes" of inestimable value in lengthening life of wire rope. Contains 78 "right and wrong" illustrations, 41 wire rope life savers, 20 diagrams, tables, graphs and charts.

SEND FOR YOUR FREE COPY

Send your wire rope questions to

WICKWIRE SPENCER STEEL

A DIVISION OF THE COLORADO FUEL AND IRON CORPORATION
EXECUTIVE OFFICES—500 FIFTH AVENUE, NEW YORK 18, N. Y.

Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit
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Shots from the Firing Line

(Continued from page 310)

has been completed. This 13-mile bore, drilled through rock under the Continental Divide, will carry surplus waters from the western slope of the Rocky Mountains to provide supplemental irrigation for more than 600,000 acres on the eastern slope where the water supply is inadequate.

Los Angeles District Starts Flood Control Projects

By ROBERT J. GREEN

The pre-war program of civil flood control projects for the Los Angeles District of the U. S. Engineers was picked up again when a contract was awarded to E. B. Bishop of Orland, California for the construction of nearly a mile of Los Angeles River channel improvement. The $759,600 contract marks the resumption of the program which halted abruptly when war forced the Los Angeles District to devote all its energies to necessary military work.

The new channel improvement job consists of the construction of reinforced concrete lining on the slopes of the river bank, with parapet walls and berm paving at the top. Concrete pier extensions will be built for the Spring Street and Main Street bridges. Other features are the construction and removal of a temporary railroad embankment, replacement of wooden subdrain riser hoods in the channel floor with cast iron hoods, construction of fencing on channel walls and the installation of corrugated metal pipe drains and concrete outlet structures.

The new job, when completed, will advance control of the Los Angeles River to a point 23½ miles above its mouth. Nearly 22½ miles were finished prior to the war between 1935 and 1941 by contractors and hired labor units.

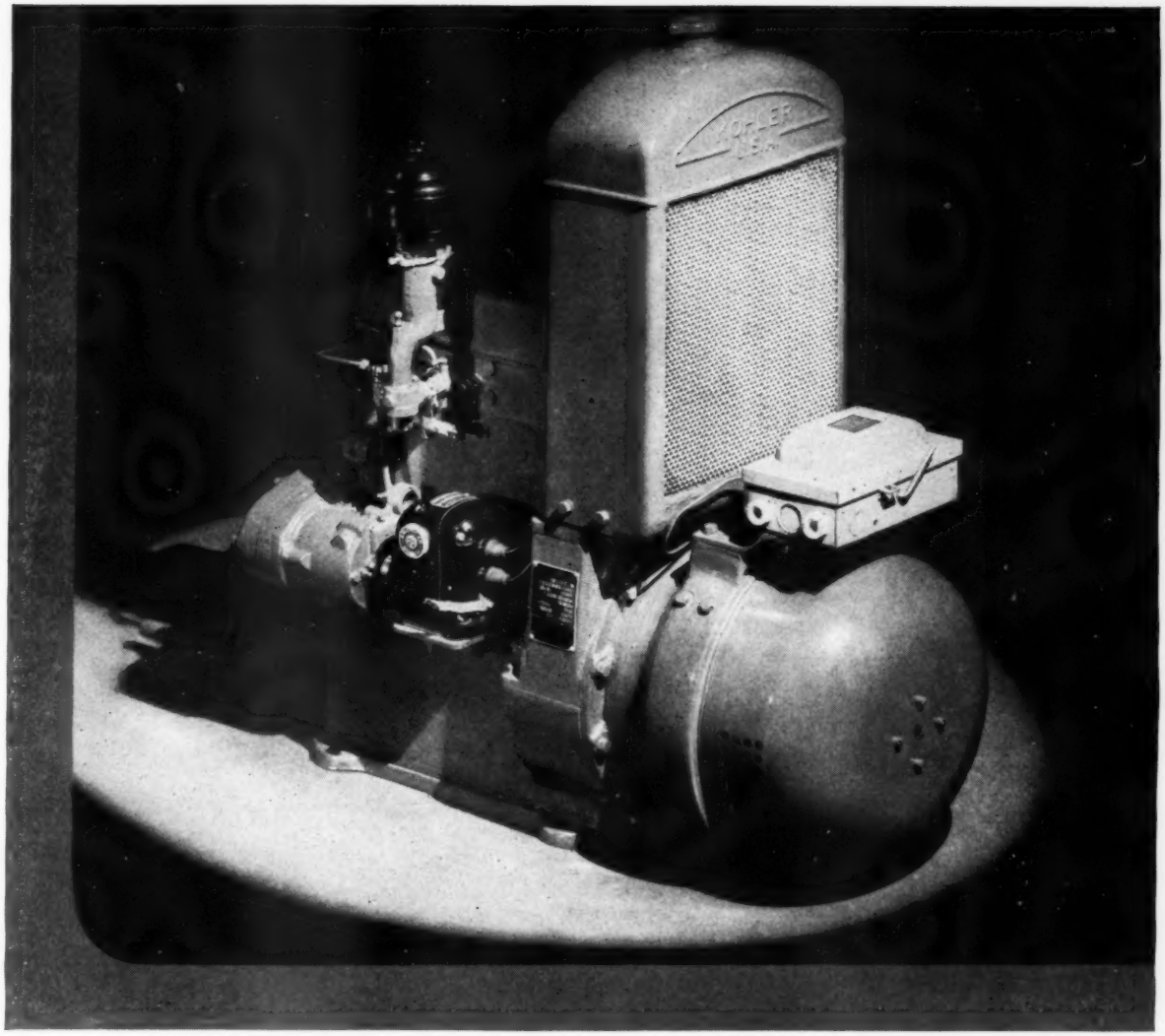
Colonel R. C. Hunter is the District Engineer at Los Angeles who will supervise the reactivated flood control construction.

Contract on Addicks Dam Awarded to Zachry Co.

U. S. Army Engineers have awarded a contract in the amount of $2,775,006.45 to H. B. Zachry and Company, San Antonio, Texas, for construction of the embankment and outlet works of the Addicks Dam near Houston, Texas, Col. Henry Hutchings, Jr., Southwestern Division Engineer has announced.

Approximately two and a half years will be required to complete the project and its construction will mark the resumption in this area of a vast Army Engineer flood-control program suspended by the war.

The Addicks Dam is authorized for construction as a part of the Buffalo Bayou flood-control project and is a part of a comprehensive plan for the protection of Houston and the Houston Ship Channel. In conjunction with Barker Dam, already completed, it will



Work doesn't stop
for lack of light and power—with
KOHLER ELECTRIC PLANTS
on the job!

WHEN time is short and conditions are tough, and you can't afford to have your auxiliary light and power fail—that's when it's mighty reassuring to have a Kohler Electric Plant on the job. Kohler Plants are a steady, reliable source of current. They are built to withstand the strain of long, hard use and severe weather conditions. Their ability to exceed the normal demands of service has made them preferred equipment among contractors and engineers.

Kohler Electric Plants are compact, easy to care for, and convenient to transport. Built-in fuel tanks provide capacity for a minimum of eight hours operation at full load. Metal housings are sturdily built to withstand frequent handling.

The Model E, 1½ KW Kohler Plant shown above is the one most frequently specified for construction work. Its efficiency is long-established for floodlighting night operations, or for driving motors, pumps, compressors, lathes, etc., in the construction of roads, airports, railroads, subways, bridges, tunnels, oil wells, oil pipe lines, and for many other purposes. Every Kohler Plant is backed by the 73-year-old tradition of Kohler quality.

Write for information. Kohler Co., Dept. 6-EE, Kohler, Wisconsin. Established 1873.

KOHLER OF KOHLER

ELECTRIC PLANTS · PLANNED PLUMBING AND HEATING

THE new model 13 series combine the compactness of the Sheppard Model 7, 8 H.P. engines with the high power output per cubic foot of the Model 6, 25 H.P. units.

Included in their design are all the advanced engineering features found on every Sheppard Diesel.

Removable, wet-type cylinder liners . . . oil-spray-cooled pistons . . . full pressure lubrication . . . full floating piston pins . . . are just a few. The exclusive Sheppard fuel injection system insures easy, sure-fire starting because it was developed with the Sheppard engine—not adapted to it.

The 2 cylinder Model 13 engines . . . like all other Sheppard Diesels . . . are of the full Diesel, solid fuel injection type with compression ignition. No special starting devices . . . no electrical ignition . . . no carburetor to maintain and service. 24 volt electric starting motor, power take-off and clutch are standard equipment on both engines.

The Model 13 Sheppard Diesels are ideal for driving portable or stationary pumps, compressors and saw mills. Their compact design facilitates handling and assures maximum H.P. output per cubic foot of installation space.

SEND FOR SPECIFICATION SHEET

Mail a postcard today for catalog sheet giving full specifications, dimensional drawings and power curves.

R. H. SHEPPARD COMPANY, INC., 34 MIDDLE ST., HANOVER, PA.

DIESEL'S THE POWER . . .

Sheppards' the Diesel

Power Units, 3¾ to 56 H.P. • Generating Sets, 2,000 to 36,000 Watts

control flood waters in the upper part of the Buffalo Bayou Basin. The dam will cross South Mayde Creek about a mile above its junction with Buffalo Bayou.

The dam, an earth-fill structure, will be 61,166 feet long with a maximum height above stream bed of 48.5 feet. From a maximum base width of 302 feet the dam will slope to a crest width of 15 feet.

The outlet works, on the left bank of the stream, will consist of a rip-rapped and paved approach channel, an intake, five 8 by 6-foot conduits with a control structure for the center conduit (the only one which will be controlled), a stilling basin with flaring walls, and a rip-rapped discharge channel 150 feet long. Conduits will be placed at the 73-foot elevation, at the old stream bed level.

Maximum pool elevation will be 113 feet above sea level and at that level the water will cover an area of 16,450 acres with a volume of 205,000 acre-feet.

U. S. Engineers Award Fall River Dam Contract

U. S. Army Engineers have awarded a contract of $6,107,053.90 to the Arcole Midwest Corporation of Chicago, Illinois, for construction of Fall River Dam in Kansas and work is expected to get under way shortly.

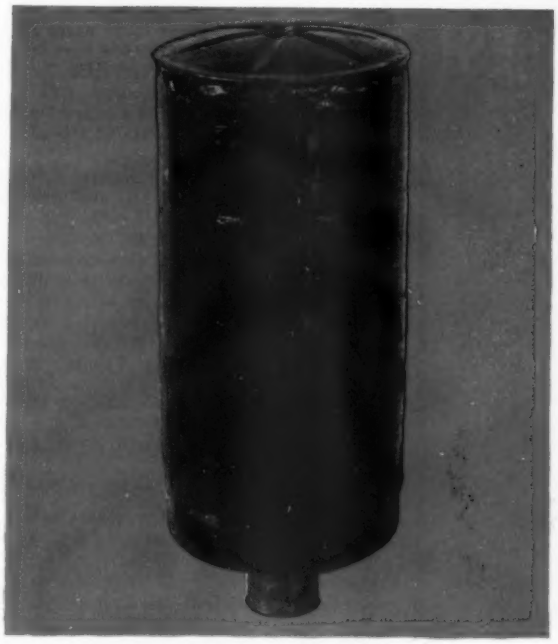
Approved by the Flood Control Act of 1941 as a unit in the comprehensive plan for flood control and other purposes in the Arkansas River basin, the Fall River project was designed by, and will be constructed under, supervision of the Corps of Engineers. The present contract, for construction of the embankment, spillway and outlet works, will be completed within 900 calendar days. Other contracts, to cover such items as clearing, will be let at a later date.

Site of the project is four miles northwest of Fall River, Kansas and about 17 miles southeast of Eureka. Structures will consist of an earthen embankment with rock-protected slopes, a spillway and stilling basin, and outlet works.

The dam, of rolled impervious and random earth fill, will have an average height above the valley floor of 66 feet, will have a crest length of 5,545 feet and, with the spillway, a total length of 6,455 feet. Its top width will be 28 feet.

The gate-controlled, concrete gravity spillway with ogee weir and stilling basin will have eight 50-foot wide by 25-foot high tainter gates operated by individual electric motor hoists located under the spillway bridge floor. There will be seven rectangular sluices, five feet wide and eight and a half feet high, through the piers of the structure, and flows will be regulated by seven vertical-lift service gates of the same size. A 30-inch diameter conduit will provide for low flow. The spillway and outlet works will be located between

Diesel Engine DANGER points

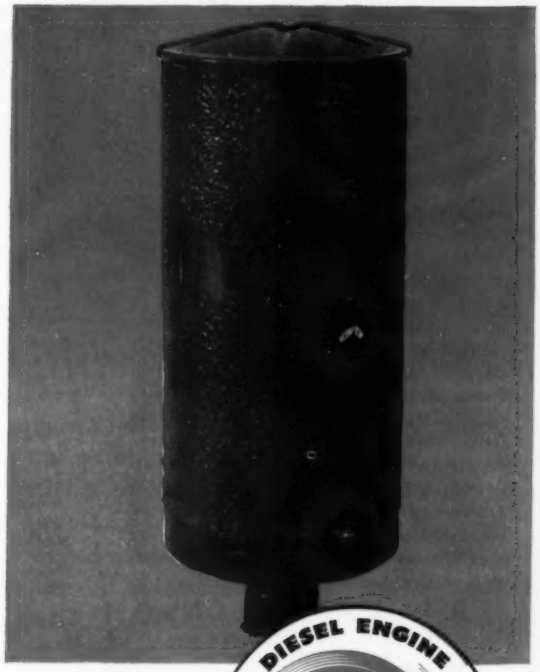


Filter deposits formed in 204 hours with best uncompounded mineral oil.

Clogged Oil Filters Cause Frequent Shutdowns

One cause of frequent costly and time-wasting Diesel shutdowns is filter clogging. The condition can become dangerous since a clogged filter may stop circulation of oil to the engine if the warning of a drop in oil pressure is not heeded. Analysis of filter deposits prove them to be composed of products resulting from incomplete burning of the fuel and oxidation of oil plus iron, silica and water.

Filter Deposit formed in 1230 hours with RPM DELO Oil.



RPM DELO Oil Reduces Filter Clogging Two Ways

As the two filters illustrated show, RPM DELO Diesel Engine Lubricating Oil greatly lengthens the time between shutdowns for filter servicing. This is accomplished in two ways:

1. A detergent in RPM DELO Oil prevents the stuck piston rings which, through blow-by, permit dust, unburned fuel and carbon to mix with oil.

2. Another compound in RPM DELO Oil fortifies it against oxidation.

Other additives in RPM DELO Oil protect Diesel Engines against corrosion, excessive wear on upper cylinder walls, and foaming.

DIESEL ENGINE RPM DELO LUBRICATING OIL

To match the fine performance of RPM DELO OIL, use these equally efficient companion products from the same famous "RPM" line—RPM HEAVY DUTY MOTOR OIL—RPM COMPOUNDED MOTOR OIL—RPM GEAR OILS AND LUBRICANTS—RPM GREASES. For additional information or name of your distributor, write any of the companies below:

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STANDARD OIL COMPANY OF TEXAS · El Paso, Texas
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Plenty of light *on the job,* with Onan Electric Plants

All the illumination you need for night operation . . . inside shovel cabs, spot-lighting dangerous obstacles, or flood-lighting entire work areas.

Onan plants have many advantages as a source of power for lighting *on the job.* Can be truck mounted, installed in or on construction machinery, or even carried by hand depending on size. Capacities range from 350 to 35,000 watts. Onan gasoline engine powered, they are easy to start. Built as a compact single unit with Onan generators direct-connected for permanent alignment.

Lighting is only one of many uses for Onan-generated electricity. Used extensively in the field for powering electrical tools, pumps and other motor-driven equipment.

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PRIME MOVER: ONAN 4-cycle, one and two cylinder gasoline engines. Air or water-cooled. Four and six cylinder heavy-duty industrial engines on larger models.

GENERATOR: ONAN. Direct-connected to engine. Inherently regulated. Self-excited. Heavy-duty construction. Drip-proof.

STARTING: Manual, electric push-button at plant, remote control, or automatic.

CAPACITY RANGE: 350 to 35,000 watts.

ALTERNATING CURRENT: 115 and 230 Volts, 50 and 60 cycle. Single-phase for all capacities. 3-phase for models 3 KW or larger. Other voltages and frequencies available.

DIRECT CURRENT: 115 and 230 Volts, 600 to 10,000 Watts. 6, 12 and 32-Volt Battery Chargers to 3500 Watts.

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ELECTRIC PLANTS

the embankment and the right abutment of the dam.

At the top of the gates, elevation 987.5, the flood-control pool will inundate 10,400 acres, and will store 263,000 acre-feet. At the spillway crest elevation of 962.5 feet above sea level the reservoir will cover 5,000 acres and will have a capacity of 80,000 acre-feet. The conservation pool elevation, level at which the pool normally will be kept, is 948.5 feet above sea level and at this contour will contain 27,000 acre-feet, inundating 2,600 acres.

The embankment will require 3,600,000 cu. yds. of rolled-fill, and gravel and rock protection will total 225,000 cu. yds. A total of 136,400 cu. yds. of concrete will be placed in construction of the project. More than a million pounds of reinforcing steel will be used, there will be 950,000 pounds of steel in the tainter gates, and miscellaneous metal work and pipe will total 317,000 pounds.

Appropriate $6,965,800 for Flood Control Program

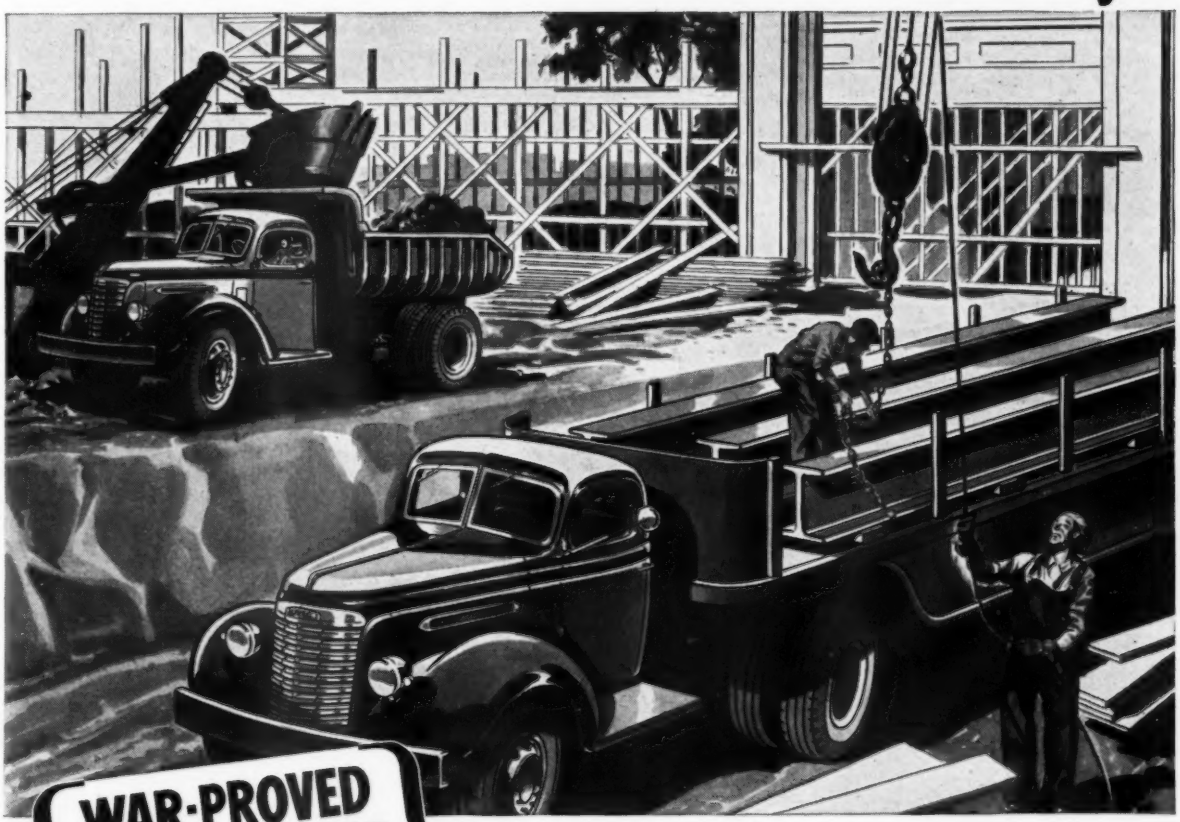
A Congressional appropriation of $6,965,800 to the Vicksburg Engineer District for its flood control program during the 1947 fiscal year was made public by Lt. Col. R. W. Sauer, District Engineer. Besides this definitely allocated amount, Col. Sauer stated that two appropriations totaling $48,500,000 have also been set aside for flood control work on the Lower Mississippi River and tributaries, in which program the Vicksburg District will probably share.

The large appropriation, part of a grand total of $194,315,000 allocated to the Flood Control Division of the Army Engineers, embraces nine projects planned by the Vicksburg District in the states of Mississippi, Arkansas, and Louisiana. It is also a part of the huge sum appropriated by Congress for the Civil Works program of the Army Engineers, an amount totaling over $300,000,000.

The Narrows and Blakely Mountain Reservoirs in Arkansas, construction of which was deferred because of World War II, were included among the nine projects for which money was allocated. The others were, Homochitto River, Miss., $14,000, Bayou Bodcau, Red Chute and Loggy Bayou, La., $123,500, Bayou Bodcau Reservoir, La., $1,300,000, Shreveport, La. construction, $900,000, Boeuf and Tensas Rivers and Bayou Macon, La., $1,000,000, Pineville, La., construction, $128,300, the Aloha-Rigolette Area of La., $500,000 and work on Big Sunflower River and tributaries, Bear Creek, and Steele Bayou, Miss., $500,000.

"Civil Works" is no misnomer in the case of these projects, Col. Sauer stated. The bulk of the work, especially in the construction field, is let to private contractors through open bids, and each project not only benefits the community in which it is located, through installations of needed public works, but fur-

NEW GMCs for Heaviest Hauling



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- Powerful, economical "Army Workhorse" engines of Valve-in-Head design with Tocco-hardened Crankshafts, Airplane type "Durex" Main Bearings, Heat-resisting Exhaust Valves with Improved Valve Seat Inserts, Positive Crankcase Ventilation, Turbo-Top Pistons and Full Pressure Lubrication through Rifle Drilled Connecting Rods.
- Rugged, built-for-the-job chassis with extra strong Frames, Springs and Axles, heavy duty Transmissions and Clutches, Needle Bearing Universal Joints, Recirculating Ball-Bearing Steering and powerful, easy-action Brakes.
- Rider Ease Cabs with Cradle-Coil Cushions, Wide Visibility "V" Windshields, Quick-vision Instrument Panels, All-Weather Insulation and Controlled Ventilation.

New GMCs offer you the most in heavy duty truck value in a most complete selection of models. There are tractor units, dump models, four-wheelers and six-wheelers in tonnage ranges to fit every requirement . . . and with equipment options which include worm, double reduction and dual drive axles, 5-speed underdrive and overdrive transmissions, gasoline and diesel engines, heavy duty clutches and air brakes. It will pay you to investigate GMC. For, whatever you haul . . . sand and gravel, cement, ore, steelwork, heavy construction equipment and many more . . . you'll find a war-proved, improved GMC truck ideally suited to the job.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE
DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

• Three recently purchased trailer-truck units like the one here give better protection for North Carolina's state and commercially-owned forests. The strap iron "cage" on the Bullgrader gives the operator protection from branches and vines.

nishes jobs for a number of the inhabitants. The amount appropriated by Congress is contained in the report of the conferees on the War Department Civil Functions Appropriation Bill, which was adopted by the House and Senate in April.

Work on the Narrows Dam near Murfreesboro, Ark., was initiated when Clark and Farrell Construction Co. of Memphis, Tenn. began construction of the access road to the damsite. Blakely Mountain Dam is in the final stages of design and construction operations are expected to be started during the latter part of this year. All work involved has been assigned a high priority rating and will be initiated in the near future.

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"HERCULES"
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WIRE ROPE
always comes through
on TOUGH JOBS!
It takes stamina, flexibility and dependable performance if the tennis player is to come through to victory.
Industry, too, calls for the same qualities in Wire Rope if the tough jobs are to be done successfully. That's why so many Wire Rope users have turned to "HERCULES" (Red-Strand)—they have learned by repeated tests that it can be depended on...even in emergencies.
As "HERCULES" is made in a wide range of types and constructions, there is—in this one grade—a right rope for every heavy duty purpose.
HAVE YOU TRIED Preformed "HERCULES" RED STRAND WIRE ROPE —? IT'S TOPS AS A MONEY SAVER

The next time a tough job comes up, have our engineers make a recommendation for your specific needs.

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States Receive Bids on 576 Federal-aid Road Projects

State highway departments and the District of Columbia received bids during the first three months of the year for 576 Federal-aid road projects, according to reports from field offices of the Public Roads Administration of the Federal Works Agency. The total amount of low bids submitted was $104,212,176. The list included one project in Puerto Rico.

Contracts were awarded in the three-months period for 413 projects at a construction cost of $71,803,075. A total of 124 bids involving expenditures of $21,096,040 were rejected by the State highway departments without action by the Public Roads Administration because of the extent to which they exceeded estimated costs. Bid rejections by the States represented approximately 20 per cent of the total volume of work on which bids were taken.

Bids on 15 additional projects which would have cost $2,292,425, or two per cent of the total, were rejected because of the refusal of the Public Roads Administration to concur in the award of contracts. Refusal of concurrence on these projects was prompted by high bids.

At the end of March, contract awards were pending on 24 projects having a total construction cost of $9,020,636.

Under a recent ruling, field engineers of the Public Roads Administration are required to withhold approval and submit to the Washington office for review all low bids that are 50 per cent above the cost of similar Federal-aid road construction undertaken in 1940. In several instances, however, Public Roads has approved the award of contracts that were more than 50 per cent above the contract price of comparable highway work prior to the war.

Concurrence or non-concurrence in contract awards recommended by the States is based upon a careful study of the individual project, with due consideration given to the increased cost of labor and materials, the urgency of the need for immediate construction and other conditions, a Public Roads official stated.

The number of contracts let during

(Continued on page 324)

DUST-FREE HIGHWAYS

. . . . ARE BORN IN DUST!

Most Road Building Operations—Clearing, Excavating, Filling, Grading—Impose Many Barriers to Efficient Air Cleaner Performance.

- Severe dust conditions
- Constant vibration and shaking
- High air demand
- Frequent, long periods of angle operation.

Donaldson Heavy Duty Oil-Washed Air Cleaners take these unusual conditions in stride. They provide high air cleaning capacity, generous dirt holding ability, and dust removal efficiency of close to 100% even under adverse operating conditions. Furthermore, when fitted with the Donaldson Collector Pre-Cleaner they cut servicing time. As a result most manufacturers of heavy duty diesel and gas engines used in road building machinery have chosen Donaldson Cleaners as standard equipment.

IF YOU HAVE AN AIR CLEANING PROBLEM THAT REQUIRES "ENGINEERED TO THE JOB" DUST PROTECTION . . . WRITE US.

World's first and largest manufacturer of air cleaners for heavy duty equipment.

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DONALDSON Oil-Washed AIR CLEANERS

"TOURNAPULLS MOVED MORE than any other

Comparative study made on 250,000 cu. yd. Queens Lane Reservoir job in Philadelphia proved to Augustine Construction Company the ability of Tournapulls to double the production of its crawler-drawn scrapers on short 300 to 600′ hauls in tough materials and adverse operating conditions. Here's what Sal Augustine has to say about it:

"Job consisted of approximately 250,000 cubic yards of dirt, mica schist, clay, sand and rooted rock. All of the job was in reverse operation from normal cut and fill, loading down in the pit and hauling uphill to make fill for a dike approximately 50′ high. Adverse grades ran to 17%. Operations continued through snow, rain, sleet, freezing weather, frost . . . material was frozen in the mornings, damp and slippery around noon.

"Our Tournapulls worked right through it all . . . moved more yardage on hauls as short as 300′ than any other piece of dirtmoving equipment on the job."

Each Tournapull Averaged 1500 Pay Yards Per 8-Hour Day on 600′ 1-Way Haul

A time study made in January showed each Tournapull averaged 17 loads per hour on a 600′ 1-way haul. This was double the production of crawler-drawn scrapers working on the same cycle . . . in the same tough materials, grades and working conditions.

No Tournapull Delays

Started in late November, this all-winter job was scheduled for completion in March. Because of the Tournapulls' production capacity and ability to keep working without breakdown or repairs, the job was actually finished in early February, ahead of schedule.

Increase YOUR Profits with Tournapulls

Actual case histories like this prove that Tournapulls are delivering lowest-net-cost-per-yard on all types of jobs . . . on all lengths of hauls . . . under all operating conditions. They will do the same for you. Ask your LeTourneau Distributor for facts and figures TODAY.

C46

YARDAGE ON SHORT HAULS
piece of equipment on job"
says Augustine Construction Company

Fast, positive ejection saved time on the fill . . . controlled spreading built up excellent shoulders . . . Tournapulls had no trouble operating close to edge of embankment.

Tournapulls were snatch loaded to capacity in 55 to 60 seconds. A Le-Tourneau Rooter was used to break up material for fast loading.

Correct ratio of weight to horsepower gave fast acceleration, enabled Tournapulls to make a 1200' round trip every 3.5 minutes.

All dirt was moved uphill from center of reservoir to build 50' dike enclosure. Grades ran as high as 17%, often were wet, frosty and slippery.

LE TOURNEAU
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

JOB-PROVED
Over 4300 Built and Shipped

TOURNAPULLS*

* Trade Mark Reg. U. S. Pat. Off.

Shots from the Firing Line

(Continued from page 320)

March for all types of highway work under State or Federal supervision, including Federal projects, Federal-aid projects, and road work financed entirely by State or local government agencies (State supervised), amounted to 584. These contracts were for improvements on 3,176 miles of roadway, at a total cost of $39,488,044, as compared with 284 contract awards in February, at a cost of $26,474,085, and 219 contract awards in January for road projects costing $28,127,704.

During the three-months period, 1,087 contracts were awarded for Federal, Federal-aid and State supervised non-Federal-aid projects, at a total cost of $94,089,833. The figures include a small amount of work on National forest roads, for which contracts were awarded by the Federal Government.

State highway construction programs under funds authorized for the first post-war fiscal year, approved by the Public Roads Administration as of April 6, call for expenditures estimated at $389,445,000. On that date the Public Roads Administration had approved detailed plans for highway projects financed with post-war funds estimated to cost $152,031,000.

For TOUGH JOBS

GATKE SWING FRICTIONS

GATKE Moulded Asbestos Swing Friction. Made in all shapes and sizes.

GATKE Brake Linings, Clutch Facings and Frictions

for all Excavating, Road Building and Contractors' Equipment.

Replacements for popular models carried in stock.

TREMENDOUS POWER — for effortless control—no let down when things get hot.

SMOOTH ACTION—for precision handling—no grabbing or chattering.

LONG WEAR LIFE beyond comparison.

These are a few of many extra performance values that help keep production high and maintenance low.

Whatever the equipment or service, send details and dimensions for the GATKE Recommendation.

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Work Begins on Final Link of Contra Costa Canal

Work will begin soon on construction of the final link of the 47.5-mile Contra Costa canal and Mountain View dam and reservoir on the Central Valley Project in California, Richard L. Boke, Regional Director of the Bureau of Reclamation in Sacramento announced, on receipt of word that Secretary of the Interior J. A. Krug had authorized a $568,974 contract for the work, to the Parish Brothers of Benicia, California. The Contra Costa canal will provide for irrigation of 22,000 acres of orchard and truck-farm lands and furnish industrial and domestic water supplies for cities in the San Francisco Bay area.

It is one of the principal waterways of the Central Valley Project. According to Boke, the Parish Brothers were lowest of four bidders. Work to be done includes excavation, concrete lining and structures for the last 3.6 mile section of the Contra Costa canal, and the construction of Mountain View dam. The latter will be an earth embankment about 50 feet high and 1,200 feet long to form an equalizing reservoir at the western terminus of the canal near Martinez, California.

A 38-mile section of the canal has been in operation since 1940 and played an important wartime role in supplying water for industrial use by steel and paper mills, sugar and oil refineries, rubber and chemical plants in the vicinity of Antioch and Martinez. It also provided a domestic water supply for city and suburban areas where salt water intrusions from the upper bay had contaminated local supplies.

Water in the canal is lifted 124 feet by four pumping plants near Oakley, after which it flows by gravity. When project transmission lines are extended to the area it is planned to provide power for pumping from the plant at Shasta Dam. The water supply for the Contra Costa canal system will receive the full benefit from releases of water stored at the Shasta reservoir when the project is completed.

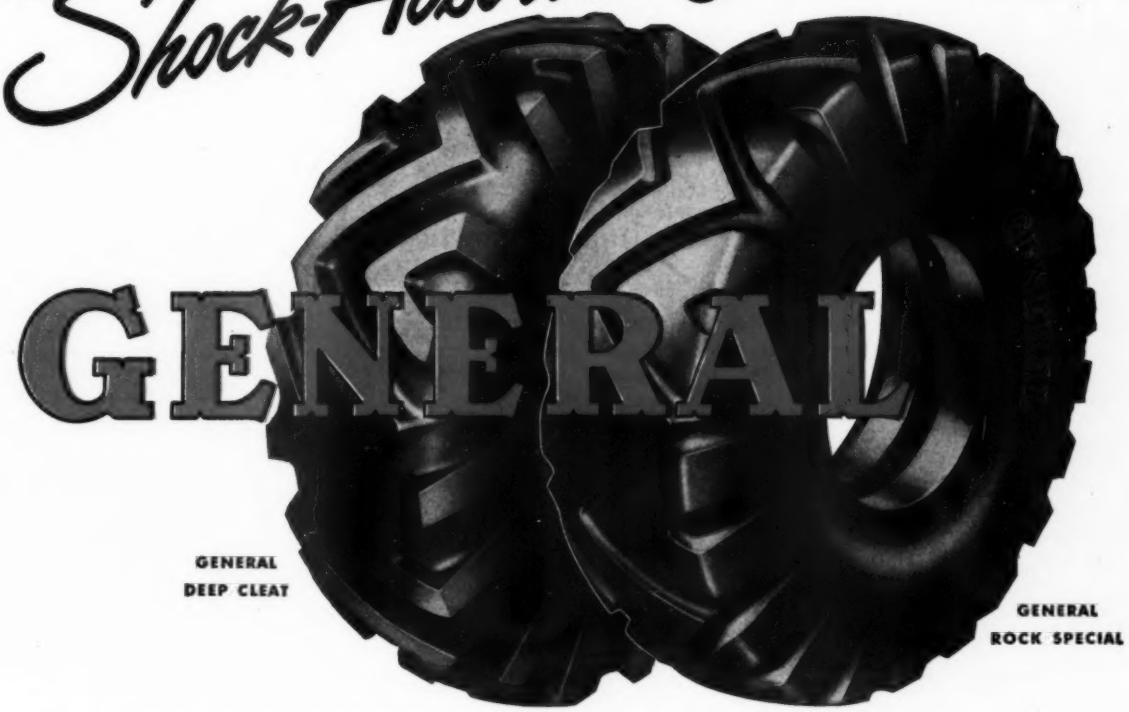
In the contract for construction of the final section of the Contra Costa canal the principal items of work required will be the excavation of 137,750 cu. yds. of earth, 160,000 cu. yds. of compacted embankment for Mountain View dam, 4,380 cu. yds. of concrete on canal lining and structures. The contractor is required to complete the work within 350 days after receipt of notice to proceed.

Kentucky Road Contracts Now Total $6,043,521

Contract awards amounting to $927,584.95 for new Kentucky highways were signed by J. Stephen Watkins, Commissioner of Highways. A 15.3 mile stretch in Campbell and Pendleton counties on U. S. 27 south from Alexandria will cost $824,718.15, while two surfacing projects in Hopkins and

NEW TIRE CONSTRUCTION ABSORBS SERVICE DAMAGE —REDUCES OPERATING COSTS

the *Shock-Absorber Constructed*



GENERAL DEEP CLEAT

GENERAL ROCK SPECIAL

● General Off-the-Road Tires take "in stride" the service abuses that commonly cause tire failures. Their exclusive construction *absorbs* and uniformly distributes heaviest shock loads and stresses throughout the tire carcass . . . thereby neutralizing concentrations of impact that frequently cause bruising . . . tearing . . . snagging . . . blow-outs.

Built with General's famous Top Quality, the exclusive shock-absorbing design of General Off-the-Road Tires produces a new standard of long tire service and economy for heavy contractors.

THE GENERAL TIRE & RUBBER CO. • AKRON, OHIO

The GENERAL TIRE — OFF-THE-ROAD TIRES

Morgan counties will total $102,866.80. These awards bring the total road contracts definitely awarded since January 1, 1946, to $6,043,521.15.

Proctor Channel Excavation Engineer for China Program

Charles A. Proctor, Kingston, Pennsylvania, recently appointed Channel Excavation Engineer for the UNRRA China Program, left for Shanghai with 40 other UNRRA specialists.

Brest Heads Florida Road Builders' Association

Alex E. Brest of Jacksonville was elected president of the Florida Road Builders' Association. W. Harry Armston of Dinedin was named vice president, and R. L. Bannerman of Tallahassee, secretary-treasurer.

Although voting to change its name, the group, formerly known as the Florida Section, American Road Builders' Association, endorsed continued affiliation with the national organization. A constitution and by-laws were approved, with revisions to be made by officers and a board of directors which will be named by the president.

Also authorized was the employment of an executive secretary at an annual maximum salary of $7,500. Bannerman was instructed to contact Florida Road Department officials to urge immediate amendment of specifications or adoption of a special provision which would provide that freight rate increases affecting existing or future road department contracts be paid by the department and that freight rate decreases affecting the same contracts accrue to the department.

Award Soils Engineer Army Commendation

In a brief presentation ceremony held in the U. S. Engineer Office, Detroit, Colonel A. Riani, Detroit District Engineer, at the direction of the War Department awarded the Army Commendation Ribbon and citation to Lt. Colonel Olaf L. Stokstad for his "exceptionally meritorious service as Soils Engineer for the Detroit Engineer District, Detroit, Michigan, from 24 August 1942 to 18 July 1943."

Colonel Stokstad, a noted soils authority with the Michigan State Highway Department prior to entering service early in the war, was recently relieved from active duty in the Corps of Engineers, U. S. Army, and has resumed his former position as Soils Engineer in the Highway Department.

While serving in the Detroit Engineer District as Soils Engineer, Colonel Stokstad was responsible for the proper use of soil as an engineering material in the construction and maintenance of all airfields, cantonments, roads and parking lots, tank test tracks, protective dykes and embankments constructed by the Army Engineers in the Detroit District. As a result of Colonel Stokstad's expeditious handling of soils design in connection with the Detroit District's airfield program which consisted of the construction of six completely new fields and extensive enlargements to seven other fields at a total construction cost of about $32,000,000.00, not one delay was experienced in the balance of airfield design which followed his fundamental operation.

An important example of Colonel Stokstad's work in the Detroit Engineer District is the sub-grade design for the Detroit Tank Arsenal Test Track which is considered an outstanding design of its type in the country.

Brownson Urges Law to Prevent Fund Diversion

Adoption of a Massachusetts state constitutional amendment to outlaw highway fund diversion was urged by Harold R. Brownson following his reelection as president of the New England Road Builders Association at that group's annual meeting in Boston.

Asserting that Massachusetts has the worst record of any New England state for diverting highway funds to non-highway purposes, Brownson added: "Since 1931, a total of approximately $120,000,000 has been diverted in one way or another. Much of this has been by way of distribution to the cities and

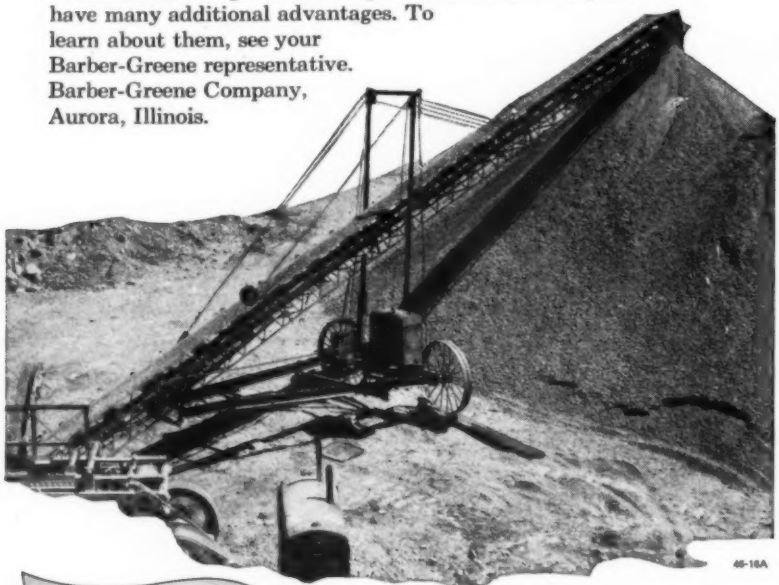
Why B-G Portable Conveyors Do So Much—For So Little

• B-G portable belt conveyors keep materials on the move at a constant flow that means high daily capacity wherever they're put to work.

They can move all over the job, the quarry, the supply yard—stock piling and loading everything from sand to cement, crushed rock to coal.

Shortened or lengthened by the addition or removal of sections, these B-G pre-engineered conveyors are highly flexible in application. They often eliminate the need for costlier permanent installations. Yet, wherever they are used, their low power requirements and simplicity mean lowest yardage costs!

Barber-Greene portable and permanent belt conveyors have many additional advantages. To learn about them, see your Barber-Greene representative. Barber-Greene Company, Aurora, Illinois.



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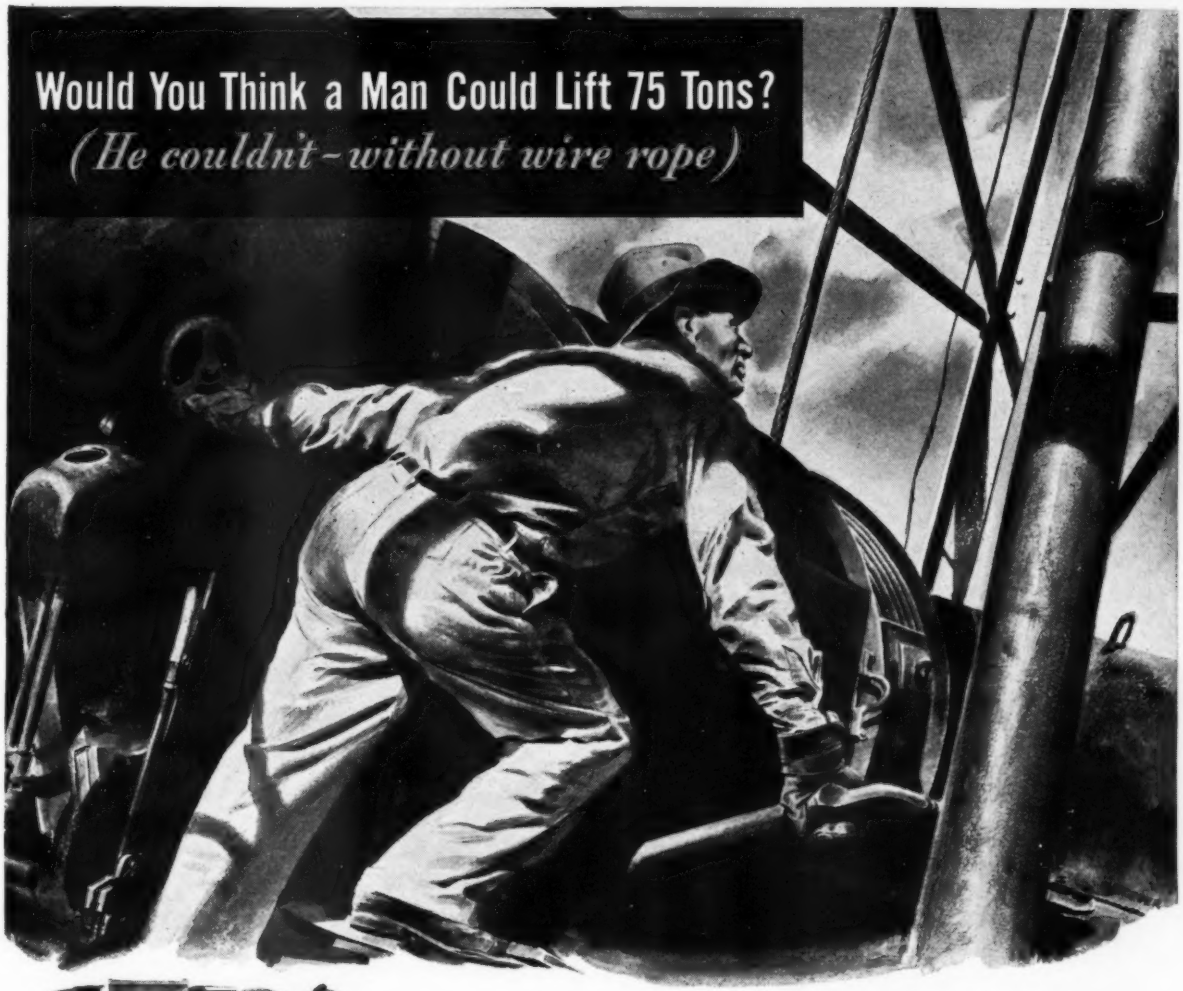
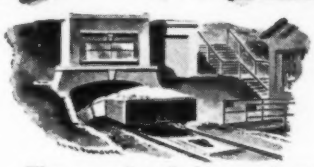
B-G Barber-Greene CONSTANT FLOW EQUIPMENT

Would You Think a Man Could Lift 75 Tons?

(He couldn't - without wire rope)





They use a lot of wire rope in and around coal mines. One important ground use is for car spotters and retarders. Preformed wire rope is easier and safer to handle.

He's lifting 15,000 feet of heavy steel drill pipe—no wonder he keeps his eye on the wire rope. Running at high speeds, wire rope tends to whip and pile up on the drum. This crushes rope and forces early shutdowns for replacement. Operators prefer Preformed wire rope because it resists whipping, spools evenly and reduces shutdown frequencies.

Power shovels scoop up earth and rock with giant bites. The wire rope makes it look easy. Being more flexible, Preformed wire rope runs over small sheaves with minimum wear.

Modern machines almost invariably are equipped with Preformed wire rope. Preformed is flexible and limber. It is tractable and free from internal tension. It handles easier, so operators like to work with it, and it lasts longer so the front office likes to order it.

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR

FIRST TRULY MODERN CLAMSHELL BUCKET

MODERN ALL-WELDED CONSTRUCTION
Gives smooth working surface and most efficient weight distribution for balance and greater digging efficiency. Stronger and longer-lived because of solid, heavy plate construction.

MODERN DESIGN
Wide, low-sided clams, with wide, solid lower arm brackets provide a capacity load and reduce spillage. Solid base plate in lower sheave block keeps sheaves clean and prolongs life. Hard cutting manganese lip edge actually gets tougher with use.

FAST OPERATION
Larger diameter sheaves, with fully sealed needle roller bearings instead of bronze bushings, reduce power loss by friction, deliver full power to cutting edge, combine to provide faster, smoother operation.

KOEHRING PRODUCT

⅜ to 2½ yard sizes. General Purpose, Wide Rehandling and Heavy-Duty Digging Type.

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KOEHRING SUBSIDIARY, CHAMPAIGN, ILL.

towns for the purpose of softening the impact of the state tax."

Other officers named by the association were: Vice president, Frederick A. Higgins of Andover, Mass.; treasurer, Joseph Maney of Boston, and secretary, Frederick Hoitt. Named directors were: Joseph F. Foley of Bristol, R. I.; James E. Lamber of White River Junction, Vt.; B. Howard Henderson of Malden, Mass.; Daniel J. O'Connell of Holyoke, Mass.; Austin E. Page of Concord, N. H.; Joseph R. Perini of Framingham, Mass.; A. I. Savin of East Hartford, Conn., and Samuel J. Tomasello of Boston.

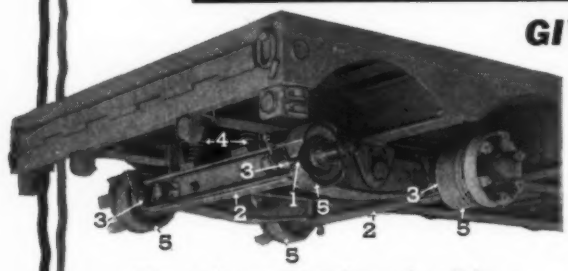
Construction Contracts Reach 17-Year High Mark

Construction contracts were awarded for 74,677 projects to cost $1,442,493,000 in the 37 states east of the Rocky mountains in the first quarter of 1946, according to F. W. Dodge Corporation, fact-finding organization for the construction industry. This was the highest dollar volume shown for the first quarter of a year since 1928, and was 134 per cent greater than in the first quarter of 1945, when the dollar volume totaled $616,780,000.

The gains in home building were most pronounced. Residential contracts involving new buildings and alteration projects totaled $467,035,000 in the first quarter compared with $65,779,000 in

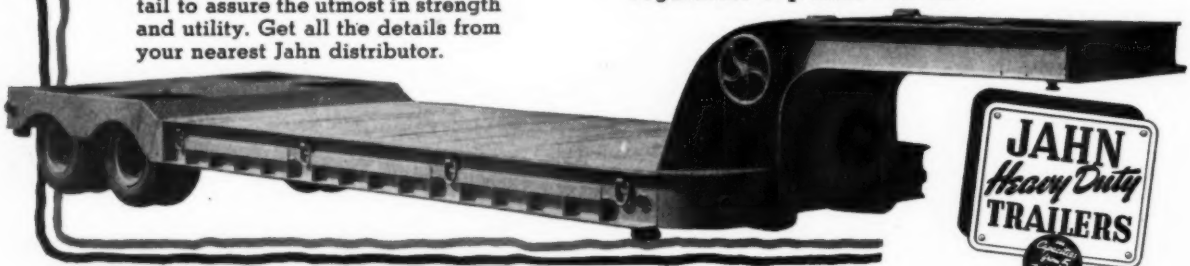
ONLY JAHN TANDEM AXLES

GIVE YOU ALL THESE FEATURES



The axle construction of a Jahn tandem axle, heavy-duty trailer is typical of attention given to every detail to assure the utmost in strength and utility. Get all the details from your nearest Jahn distributor.

1. Constant lift cam.
2. Two full-width axles attached to longitudinal rocker beams.
3. Worm gear type slack adjusters at each wheel.
4. Heavy coil springs at each axle.
5. Positive equalized braking at each wheel regardless of position of axle.



JAHN Heavy Duty TRAILERS
Capacities from 5 to 100 Tons

C. R. JAHN COMPANY

1349 W. 37th Place, Chicago 9, Ill.

"Come to Trailer Headquarters"

A WINNING PAIR

for Quarrying, Metal Mining, Construction

● This pair of modern explosives—Hercomite* and Gelamite* — will bring you maximum breakage per dollar of cost . . . a 10% to 15% saving as compared to older type explosives.

Users of Hercomite and Gelamite report satisfactory results for both surface and underground work. That's why Hercomite and Gelamite are more widely used today than ever before.

There is a strength and grade that will give greater efficiency and economy for almost every type of blasting. Write us for further information.

HERCULES

EXPLOSIVES DEPARTMENT

HERCULES POWDER COMPANY
INCORPORATED

972 KING ST., WILMINGTON 99, DEL.

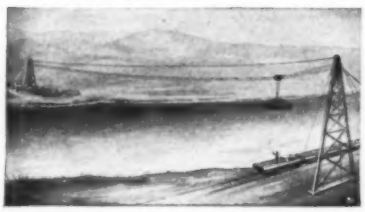
Reg. U. S. Pat. Off. by Hercules Powder Company

XR-55

Long Range Handling at Low Cost

with a

SAUERMAN 1-MAN MACHINE



(View at Left) Sauerman Tautline Cableway of simple type is sole means of transport across mountain river. Handles thousands of tons of machinery and supplies yearly. (View at Right) Sauerman Tower machine digs a basin 1250 ft. long for sewage plant; loads spoil into cars at rate of 200 cu. yds. an hour.

SAVINGS in cost, time and labor are your direct gains on dig-and-haul jobs with a Sauerman Scraper or Cableway.

ONE-MAN CONTROL, fast and positive action. Reaches across a river, pond, pit or stock pile, or to top of hill—moves material from any point within cable radius, and dumps automatically wherever desired.

Whether you handle small or large daily tonnage, we can supply size and type of equipment exactly suited to your needs.

Write or wire for Sauerman Catalog. Let us advise you on your specific jobs.

SAUERMAN BROS., INC.

574 S. Clinton St. *Power Scrapers & Cableways* SINCE 1909 Chicago, 7 Ill.

DO YOU OPERATE AN $18,000 BUCKET?

If you operate an $18,000 crane on *bucket work*, you most certainly operate an $18,000 bucket, for your entire crane investment during that period depends upon the efficiency of the bucket. We know a contractor who operated a used ½ yd. bucket when an analysis of the job and crane called for a ¾ yd. bucket. *In ordinary excavating work he lost 10 cu. ft. of pay load on every bucket cycle.* Do a little figuring or better yet, wire us collect the capacity of your crane, the boom length, and the material handled. We'll give you facts that will mean more profits on bucket work—help you get the most out of your crane investment on bucket work.

ERIE STEEL CONSTRUCTION CO.

466 GEIST RD., ERIE, PA.

BUCKETS • AGGREMETERS • PORTABLE CONCRETE PLANTS

the corresponding quarter of last year. The Dodge compilations showed that 67,115 dwelling units were called for in the first quarter contracts compared to 14,548 in the first quarter of 1945.

Nonresidential construction volume, comprising 16,764 projects, reached $716,910,000 in the first quarter against $388,612,000 in the corresponding quarter of 1945.

Award Two Contracts on Oklahoma Irrigation Project

Award of two contracts totaling $340,627 for construction of irrigation canals and a concrete pipeline on the Altus Project in southwestern Oklahoma has been authorized by Commissioner of Reclamation Michael W. Straus. The project is being built by the Bureau of Reclamation to irrigate 70,000 acres of land and provide a water supply for the City of Altus.

The first contract, authorized for award to the Stebbins Construction Company of Tulsa, Oklahoma, on its low bid of $185,712, covers construction of the 11.5-mile West Canal, one of the principal water arteries of the project, extending north and west of Blair, Oklahoma.

Start Preliminaries on Bull Shoals Dam Site

Preliminary work at the Bull Shoals Dam site on the White River in northern Arkansas is getting under way.

Ottinger Brothers of Oklahoma City has started grading for the access highway to the site, Frazier Construction Company of Fort Smith, Arkansas has begun work on an $84,000 office building to be occupied by U. S. Army Engineers, and offices have been set up by the William A. Smith Construction Company of Houston, contractor for the railroad to the site.

Bids for construction of the giant Bull Shoals Dam are expected to be opened late in June. The dam will be the fifth largest concrete dam in the country. It will have a crest length of 2,349 ft. and a height above stream bed of 263 ft. Will require 2,100,000 cu. yds. of concrete. Estimated cost $47,000,000.

South Carolina Commission Elects New Officers

South Carolina's State Highway Commission recently elected a new chairman and vice chairman, installed five new commissioners and approved a $6,000,000 secondary road building program.

J. L. Caudle of McCormick and W. G. DesChamps of Bishopville were unanimously elected chairman and vice chairman, respectively. Installed as new commissioners were J. S. Thompson, Georgetown; W. T. McClure, Westminster; Otis Baughman, Wagner; J. J. Barry, St. Stephen, and Walton McLeod, Waterboro.

You get all 3—with the model A-D

POWER 75 Diesel horsepower—more than enough for the toughest kind of work. 2-cycle engine efficiency and economy.

TRACTION 21,500 lbs. total weight... with 15,660 lbs. concentrated on the four rear Tandem wheels, that drive together... as a unit!

CLEARANCE 22-inch front axle clearance allows material to flow freely to moldboard—no hanging-up on windrow, no wasting h. p. pushing a dead load.

Plus a full range of blade positions and leaning front wheels to handle all types of grading with ease.

Plus simplified operation—easier steering and control, electric instruments, electric brakes, full operator comfort.

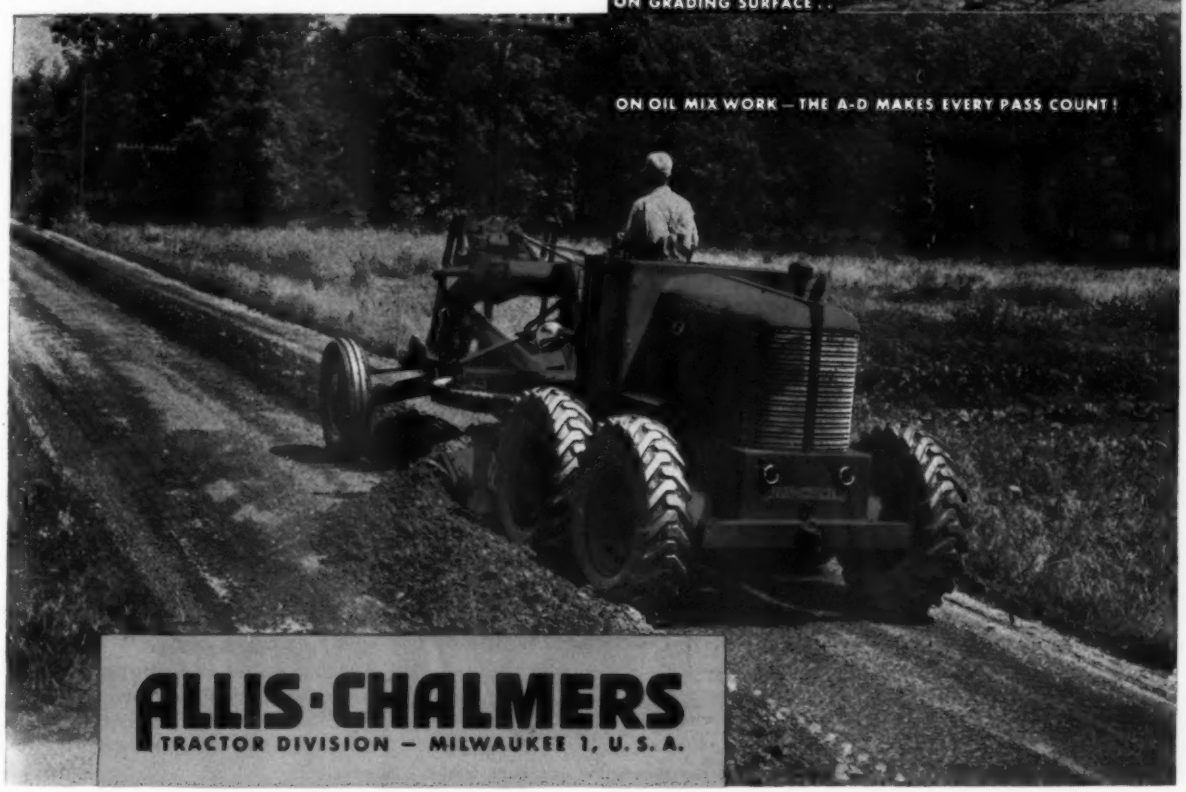
Plus a larger capacity, longer life, easier-to-operate clutch... gears that automatically lock in place... a tubular frame that resists all twists and strains.

Together these Model A-D features mean more work done, more accurately, at lower cost . . . a better job on every job!

ON SLOPING . .

ON DITCHING . .

ON GRADING SURFACE . .



ON OIL MIX WORK — THE A-D MAKES EVERY PASS COUNT!

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

NOT in the *Contract*

"Now that the war's over, I'd like to get abroad for a year or two."

"Take my advice and marry one for keeps."

Magistrate: "What started the trouble between you and the plaintiff?"

Defendant: "Well, your honor, it was like this. 'E threw 'is beer over me—I 'its 'im across the face wiv my bag of tools—then 'e cuts my 'ead open wiv a bottle—and the next thing we knows we find ourselves quarrelin'!"

Two drunks sat on the curb meditating. One spoke:

"Watsch your wife shay when you shtay out late like thish?"

"Haven't got a wife."

"Then whatsch idea of shtaying out so late?"

"Did you have a good time the other night, Gladys?"

"Naw, I've got too much willpower."

"You look as if you were all in. What's wrong?"

"Last night I called on that new girl I was telling you about. Her mother opened the door and let me in—and then and there she demanded to know what my intentions were."

"That must have been very embarrassing."

"Yes, but that wasn't the worst of it. Just as the mother had finished speaking the girl shouted down the stairs: 'Mother, that isn't the one!' "

Boss: (sending the office boy on an errand): "On the way you'll pass a baseball park."

Boy: "Yes, sir."

Boss: "Well, pass it!"

Legs are appendages that are extremely necessary to baseball players and girls who are trying to get to first base.

A careless worker is an accident going somewhere to happen.

"It's no holdup—I just want your promise to start my excavating job next week!"

Johnny was not at the dinner table when his father came home, for his mother had sent him upstairs to bed for swearing.

"Swearing?" bellowed the father. "I'll teach him to swear!" He dashed up the stairs and midway, stubbed his toe,stumbled and crashed his chin on the step.

When the atmosphere cleared a little, Johnny's mother said sweetly, "No more now, dear. You've given him enough for one lesson."

First Erector: "Why did you break off your engagement with your girl when you were home?"

Second Same: "She wanted to get married."

Two girls who hadn't seen each other for years met one day and began recalling old times.

"Do you remember the redheaded boy who lived around the corner from you?"

"I'll say I do. He proposed to me and when I turned him down he threatened to do something dreadful. Wonder what happened to him?"

"He happens to be my husband," was the snappish answer.

Two cars collided and the drivers jumped out to inspect the damage. "It's my fault," said one, "but there's nothing much I can do about it. I don't have a dime's worth of insurance and I'm broke and out of work. However, if it will make you feel any better you can call me any and as many vile names as you like."

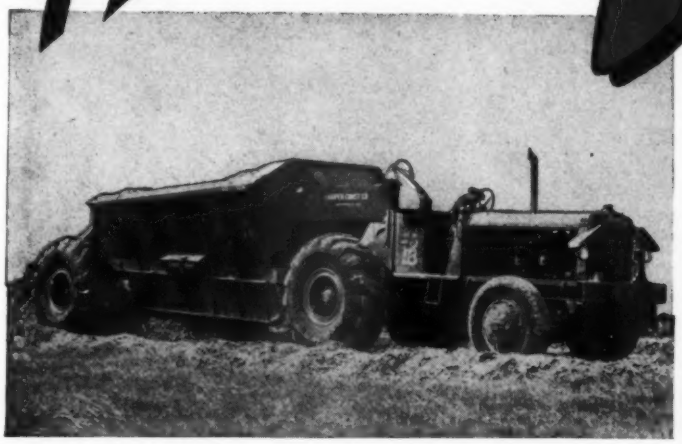
Said the other: "I'm a very pious man and my vocabulary contains absolutely no profanity or strong words. I have only this to say. I do hope that when you go home tonight your mother runs out from under the porch, barks ferociously, and bites you on the leg."

The other evening a couple hailed a taxicab. The cab, in ill repair, went jerking along for a while. Presently the driver apologetically exclaimed:

"My, what a clutch."

"Say," came an indignant feminine voice from the rear, "will you please keep your eyes on the front. This is none of your business."

FAST...CLEAN EUCLID DUMPING Cuts Costs



● Fast, non-stop dumping and accurate spotting on the fill are time-saving and cost-cutting features of Bottom-Dump Euclids.

The large, full length and width trailer doors open instantly by gravity — they are unlocked by operation of an air valve on the steering column. Smooth, steep hopper sides of the Bottom-Dump Euclid shed the load quickly and cleanly. Adjustment of the door opening permits dumping the load in long windrows or large heaps on the fill, depending on the job requirements.

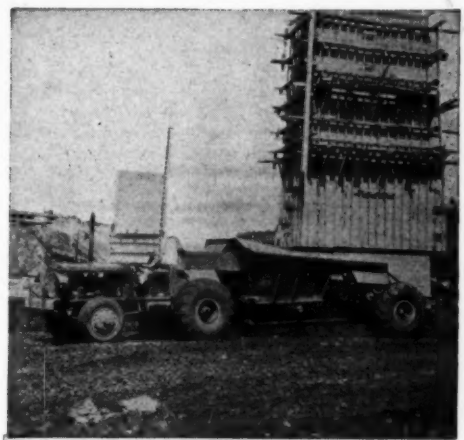
Doors are closed by engaging a driving wheel with the left trailer tire which winds the door cable on a drum of the control assembly. In a short travel distance the doors are fully closed and locked in position — driving wheel of the door control is then automatically disengaged from the tire.

The simple but rugged construction of the famous Euclid door control . . . its reliable performance and long life . . . is typical of Euclid features that result in lower hauling costs for leading contractors and industrial owners. Your Euclid distributor will be glad to provide facts and figures on what Euclids can do for you.

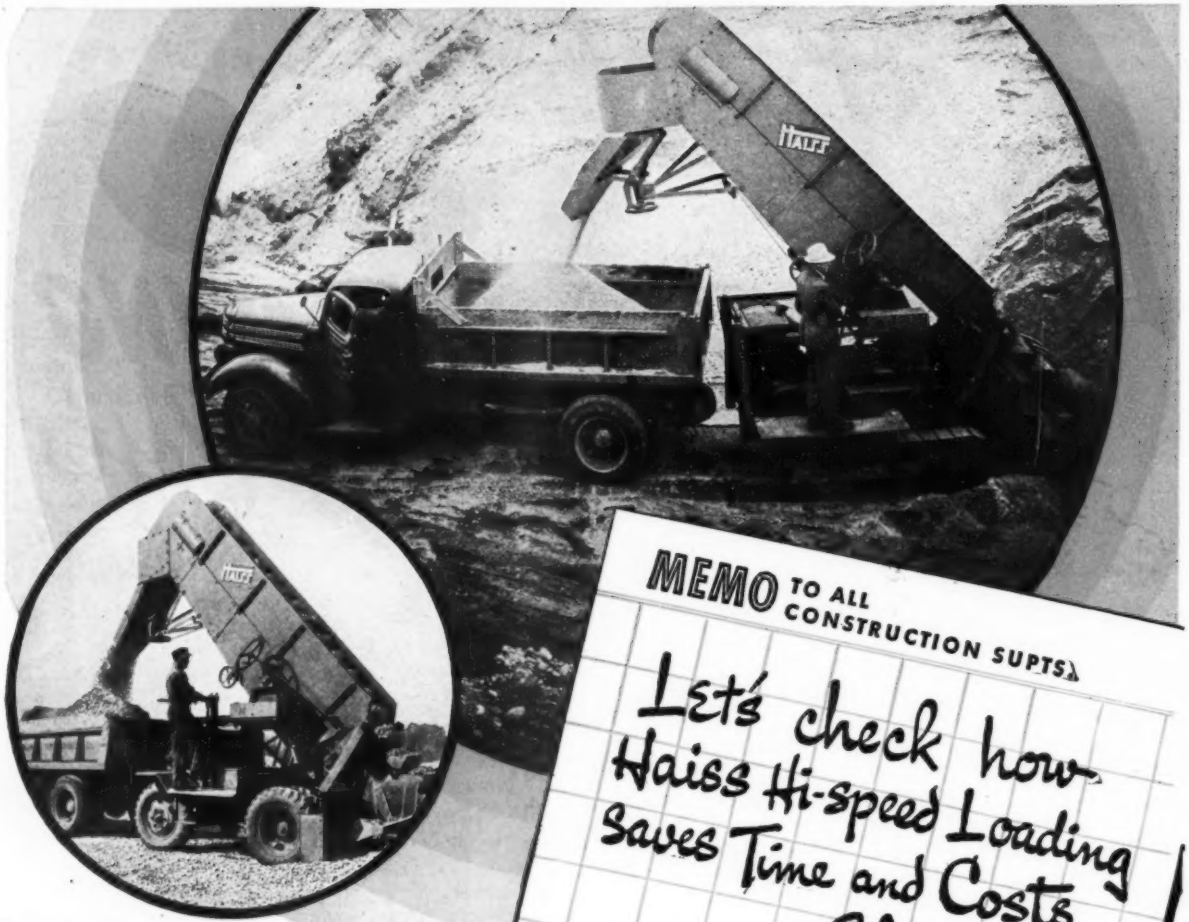
BOTTOM-DUMP EUCLIDS. Capacities of 20 to 32 tons — 13 to 42.9 cu. yds., struck . . . loaded speeds from 26 to 34.4 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

REAR-DUMP EUCLIDS. Capacities of 15 to 22 tons — 9.2 to 20.7 cu. yds., struck . . . loaded top speeds of 22 to 35 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO



The big, sturdy hopper of the Bottom-Dump Euclid is wedge-shaped to place a large part of the payload on the drive wheels for proper weight distribution and improved traction. The shallow load over the trailer wheels is discharged first, thus maintaining maximum traction on drive wheels until the complete load is discharged from the hopper.



MEMO TO ALL CONSTRUCTION SUPTS.

Let's check how Haiss Hi-speed Loading saves Time and Costs.

EJK—

SIMPLE CONVERSION MOUNTINGS Haiss simplified design of the Model 75 provides for quick interchange of creepers and wheels in the field. Standard parts. No shop work required.

When loading is tough and you can't keep trucks moving fast enough for profit, put your money on a Haiss. It's the Loader that's built to crowd a stock pile or bank and move it up to 8 yd.-a-minute speed . . . the Loader that's engineered to dig *anything* a man can shovel and do its own clean-up scraping. Haiss Loaders cost more, because they're worth more. They're worth more, because they're superbly engineered for greater mechanical reliability, greater overall operating economy. Investigate now how Haiss Hi-Speed Loading can save time and lower cost of your materials handling. Catalogs containing complete information will be mailed promptly on request.

GEORGE HAISS MFG. CO., INC.
144th Street & Park Avenue, New York 51, N. Y.
Distributors in all large cities.

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

New Equipment

(Continued from page 306)

line mounting permits full accessibility to the tractor engine.

Weight saving has been incorporated with strengthened design of parts subject to greatest stress. Particular attention had been given to a balanced mounting on the tractor for greatest traction and minimum wear on idlers and rollers. Interchangeable bucket equipment is available in sizes for various types and weights of materials. In addition, an interchangeable bulldozer blade can quickly be installed on the lift arms, to further increase the tractor usefulness.

Pneumatic-tired Crane

Manufacturer: The General Excavator Company, Marion, Ohio.

Claims: The Type 10 Model 105, latest development in pneumatic-tired combination crane-shovel-dragline equipment by The General Excavator Company is a compactly built "welter-weight" offspring of the company's General Supercrane. The new Model 105 is rated at ½ cu. yd. as a shovel with quickly convertible front-end attachments for a complete range of construction, excavating and materials handling jobs.

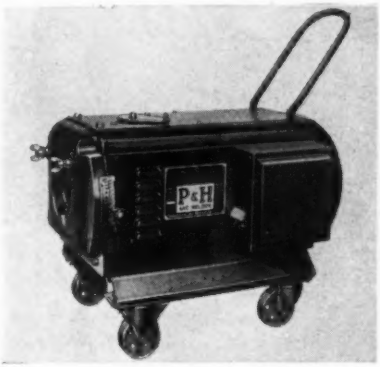
Optionally equipped with either four or six 10.00x20 tires, or with 14.00x20 rib tread tires for "off the road" service, and featuring air booster steering, the new rig is capable of highway cruising speeds of more than 20 mph.

Among improvements are optional four-wheel drive; four speeds forward and reverse; easily accessible independent assemblies; self-counterweighting machinery; heavy duty engine; transmission and clutches.

Square Frame Welder

Manufacturer: The Harnischfeger Corporation, Welding Division, Milwaukee 14, Wis.

Claims: The new Model WA-300 is declared capable of providing a rating of from 60 to 375 amperes, retaining compact design, two-part construction, single heat control, visual current calibration, and adaptability to parallel operation where higher amperage is desired. Appearing for the first time in the Model WA-300 are such new features as weather-proof construction, polarity reversing switch, and removable stator, plus overload protection both for contacts and for the new low-voltage magnetic starter.



Diesel Nozzle Tester

Manufacturer: The Buda Company, Harvey, Ill.

Claims: A new model Universal Diesel Nozzle and injector tester is a portable unit designed for use with all popular makes of Diesel engines. According to the manufacturer, no technical knowledge is required to operate the tester to measure injector opening pressures, determine accurate adjustment, check spray pattern for uniformity, and detect other irregularities such as sticking needle valves, dribble and leakage around valve seats. The tester weighs less than 19½ lbs., including all-steel carrying case which holds such extras as adaptor fittings, special cradle, and "popping" device, extra pressure gauges, risers, spray pan, etc.

Carbon Electrode Holders

Manufacturer: Tweco Products Company, Wichita 7, Kansas.

Claims: New line of air cooled carbon Electrode Holders for manual welding in four sizes, 150, 200, 300 and 500 ampere models. Positive "Hol-Grip" design with ample length and ventilation.

The 13½-oz. 150 amp. holder or the 20-oz. 200 amp. unit is furnished optionally with or without special "quick - attach" Whip Cables for short duration jobs.

so-they went to ROGERS for the WORLD'S GREATEST TRAILER

Above trailer with actual 600 ton capacity, was built for Eichleay Engineering Corp., and sold by Atlas Equipment Co., both of Pittsburgh, Pa.

and to the solution of their problem of transporting a 300 ton burden in conjunction with a SECRET military test.

In the face of unprecedented problems, Rogers designed, built and delivered in 30 days, a trailer 39 feet long and 17 feet wide.

Sixty-four 14.00"x 27" tires, mounted in banks of eight on axle units, permitted full oscillation, conforming with uneven desert terrain and equal load distribution over all tires.

WRITE FOR THE ILLUSTRATED CATALOG

EXPERIENCE *builds 'em*

PERFORMANCE *sells 'em*

ROGERS BROS. CORPORATION

136 ORCHARD ST., ALBION, PENNA.

New trade literature

Title: "What is The Conciliation Service"
Subject: A descriptive and informational summary of the functions, background, and policies of the Conciliation Service. A complete list of the Conciliation Service officers is attached.
Where to Get: Conciliation Service, Room 4223, U. S. Department of Labor, Washington 25, D.C. (Free).

Title: "Engineering Foresight . . . Manufacturing Progress"
Subject: The Gardner-Denver Company offers a booklet, largely pictorial, to acquaint those interested in the background of the company, its manufacturing, the distribution of its products to the markets of the world, and its contribution to the prosecution of World War II.
Where to Get: The Gardner-Denver Company, Quincy, Ill. (Free)

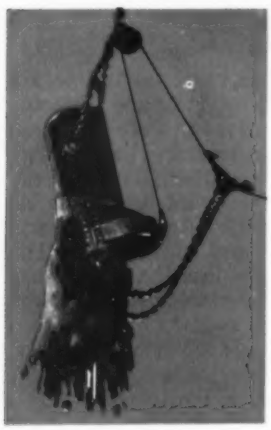
Title: "Manual of Procedure Under Government Contracts"
Subject: Fourth edition of the manual provides information on bidding, competitive contracts, Government contracting agencies, settlement of claims under Government contracts, Government sales, and war contracts and their settlement. Last revised in 1939, the present edition brings the subject matter down to date, and is further improved by the inclusion of references to many of the more important statutes and court decisions, applicable to contracts with the Government.
Where to Get: American Bonding Company of Baltimore, Baltimore, Md. (Free)

Title: "Modern Motor-Generator Maintenance and Repair Equipment"
Subject: For reconditioning war-weary machinery, the new 36-page book just issued lists and illustrates equipment designed to put electrical items in new running order. Lists 52 subjects in its index.
Where to Get: Ideal Commutator Dresser Co., Sycamore, Ill. (Free)

Title: "Reduce Your Hauling Costs"
Subject: Profitable hauling with Tournatrailers from shovel or dragline is described in this profusely-illustrated four-page folder. The folder also points out cost-cutting methods and changeability with other LeTourneau units.
Where to Get: R. G. LeTourneau, Inc., Peoria, Ill. (Free)

Title: "Presto-Lock"
Subject: The applications Presto-Lock couplings are put to, their flexibility, and engineering specifications are included in this folder. Photographs illustrate the couplings in use on oil, railroad, and construction projects.
Where to Get: Drinkwater, Inc., 2323 So. Michigan Ave., Chicago 16, Ill. (Free)

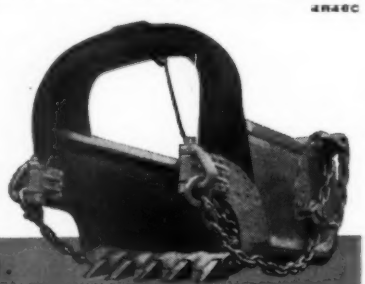
Title: "Illustrated Catalog"
Subject: The new 32-page products and facilities catalog includes the subjects of welding, heat treating, and machining of parts for trucks, trailers, and railway cars and covers repairs and repair parts for that equipment.
Where to Get: Youngstown Steel Car Corp., Niles, Ohio. (Free)



SPEED UP YOUR DIGGING WITH A

Red Arch

Red Arch buckets can speed your dragline digging because they fill easier and faster, because they're correctly balanced to carry a full heap on a fast swing, and because the dump is swift and clean, permitting a fast return. That means more dirt per pass, and more passes per hour. They have plenty of strength, too, with extra strong lips, reinforced bottoms, and the famous high red arch that permits free flow of dirt and keeps the bucket rigid through an astonishing amount of digging — yet the absence of excess weight keeps them light. Let us fill your dragline bucket requirements with a Red Arch!

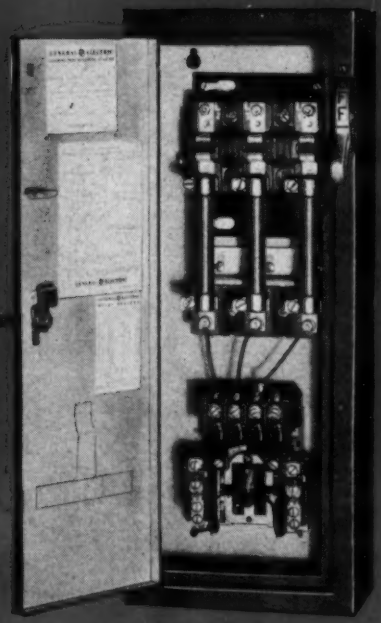


BUCYRUS ERIE

SOUTH MILWAUKEE, WIS.

LA CROSSE TRAILER CORPORATION LA CROSSE, WIS.

300 G-E COMBINATION MOTOR STARTERS...



...give White Motor Company real protection...save time, money, too.

Magnetic starter and motor-circuit switch in *one* unit—G-E "combination" motor starters of this type give co-ordinated control to over 300 machines in the White Motor Company plant in Cleveland.

The starter shown above is installed on a lathe used in making water pumps. Others control drill presses, shapers, boring mills, grinders, and many other types of machines.

Here's Why the Combination Starter Was Chosen

- Fast-acting overload relays protect the motor controlled from overheating—and fuses protect it from damaging short circuits.
- Safety for operators is assured by interlocking doors. While the power is on, the door cannot be opened.
- Quick servicing and availability of repair parts is made possible by G.E.'s broad network of sales outlets.

Wide Field of Application

This motor company represents just one of the many different industries in which G-E combination starters are at work today. Why not give the advantages of these compact, time-saving starters to *your* plant. Our engineers will be glad to help with your application. Get in touch with our local office today. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

HOW YOU SAVE...

. . . TIME. Instead of buying two devices, you order and install only one. Mounting time is cut as much as 40 per cent.

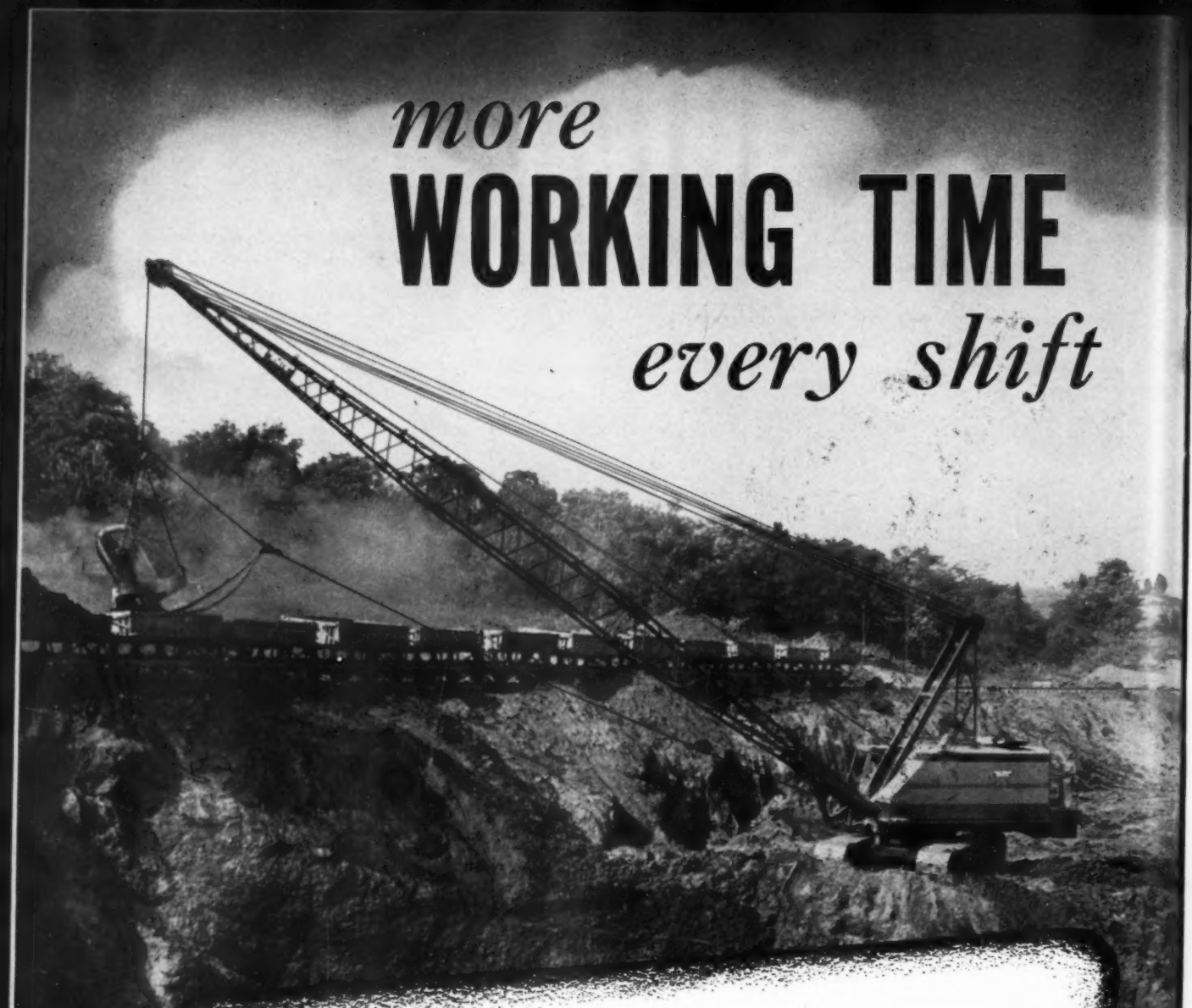
. . . SPACE. Compact combination starters can be mounted in small unused places near to or remote from the operator.

. . . MONEY. The list price is slightly more than for two separate devices, but the difference is more than made up by savings in wire, conduit, and fittings.

MORE INFORMATION about combination starters is given in our Bulletin GEA-3715A. Ask our local office for your copy.

GENERAL ELECTRIC

676-200-8910



more WORKING TIME *every shift*

IT'S DIGGING time that counts, and with Bucyrus-Erie ⅜- to 2½-yard excavators you're far ahead in digging time every shift.

Just check with the many Bucyrus-Erie owners everywhere, or with their operators. They'll tell you about the ease with which all adjustments can be made, and how long they last . . . about the accessibility that speeds maintenance . . . about the balanced smooth digging cycle that means no overstressing of any parts . . . about the conveniently grouped, easily manipulated controls that add to digging time by cutting out waste motion and reducing operator fatigue. They'll tell you that moves are easy to make fast . . . that power is ample . . . that there's plenty of strength in every part to stand up to tough digging . . . and, most important of all, they'll tell you that these Bucyrus-Erie features add up to a higher percentage of actual working time each shift — and consequently to greater output and profits.

69E46C

BUCYRUS ERIE

SOUTH MILWAUKEE WISCONSIN

The Oiler

(Continued from page 300)

of the ditch so that there can be no hidden obstruction to cause the outlet to clog. As we go up the ditch, the grade in the bottom rises and it becomes necessary to leave small dams of loose material to raise the water level if we are to use it as a guide.

It is always dangerous to follow this method without first establishing water gauges. These are simply stakes driven in the water on which is placed an easily read mark indicating a definite distance above the grade of the ditch. By measuring from this mark to the water level we always know the location of the ditch grade line.

Neat Sections

In the construction of grades, levees and ditches in open country, a certain amount of tolerance is permitted in line and grade. There would be little gained in producing a sand paper finish on slopes and grades where such accuracy is unnecessary and would only slow up production. Frequently more tolerance is permissible in slopes than in grades. Whatever tolerance is allowable, the tendency in most crews is to produce a progressively rougher job unless either the engineers on the job or the crew themselves set up certain safe guards to hold the work close to specifications.

On many jobs "neat sections" are specified in the plans of the work. In these sections the work is held to very close tolerance. Sometimes this is to provide accuracy in a location where some type of structure will be built. At other times it is only for the purpose of emphasizing the need for accuracy in the general work.

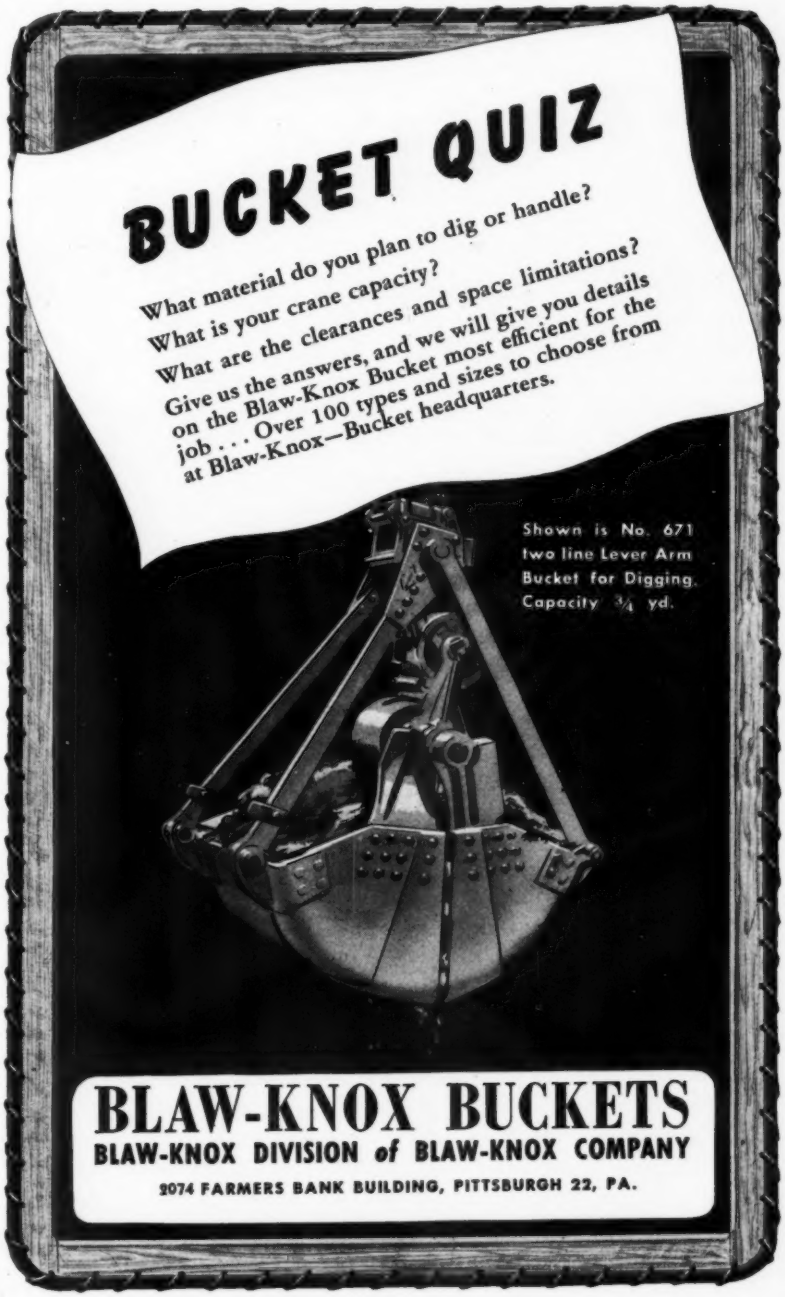
On a job where no neat sections are specified, it is good practice for the crew to establish their own neat sections as a voluntary check on the work. It is desirable to move every yard paid for, but not to move a lot of material which is outside the line and grade of the job plans.

Neat sections at locations where a change occurs in the nature of the material discourages any tendency to increase costs or slow down progress by handling material which is not called "pay dirt."

In order to do accurate work it is necessary to place the machine so the work can be easily reached. To maintain good alignment of ditch or cut slopes, it is necessary to keep the machine at the same distance from the work at each move. The opportunity to display initiative in devising methods of producing accurate work and increasing production are practically unlimited. The oiler who is interested in the efficiency of his machines continues to learn and broaden the field of his usefulness. The result is, a good oiler frequently ends up by becoming a good operator.

"So you met your wife at a dance. Wasn't that romantic?"

"H— no! Embarrassing! I thought she was home taking care of the kids."


BUCKET QUIZ
What material do you plan to dig or handle?
What is your crane capacity?
What are the clearances and space limitations?
Give us the answers, and we will give you details on the Blaw-Knox Bucket most efficient for the job . . . Over 100 types and sizes to choose from at Blaw-Knox—Bucket headquarters.
Shown is No. 671 two line Lever Arm Bucket for Digging. Capacity 3/4 yd.
BLAW-KNOX BUCKETS
BLAW-KNOX DIVISION of BLAW-KNOX COMPANY
2074 FARMERS BANK BUILDING, PITTSBURGH 22, PA.

Digging for Dicalite

(Continued from page 294)

scattered material too heavy for the laborers to shovel and too light for the power shovels to dig efficiently.

The overburden is being dumped in a part of the property now exhausted of usable rock. More than a million cubic yards were taken out of the hole now being filled with overburden.

The good Dicalite, after all the overburden has been taken off, is then loaded out by power shovel and sent to the processing mill. Here it passes through driers which take out the water. Since diatomaceous structure must be preserved in finished materials, the rock is not actually crushed or ground but is disintegrated to the consistency of a fine powder. Manufacturing details are a company "secret." The finished materials are then sampled and tested by the laboratory, and packaged in paper bags for shipment.

Eventually Dicalite shows up as a filler in paint or varnish, as an inert ingredient in cement, or on the plaster walls of your own bedroom at home, or any one of a thousand other industrial uses.

Steel Mill Dozing

(Continued from page 295)

feet high, 100 feet wide at the bottom, and is two miles long. The slag is brought out from the furnaces in railroad dump cars, averaging 50 tons per load, on rails laid on top of the pile. The rails are moved or extended as the pile grows in size. Between 700 and 800 cars of slag are dumped on the refuse pile monthly. After slag is dumped, bulldozers push it over the brink and keep the top of the pile level.

A Bullgrader working on the big stockpile of coal works back and forth over the coal, packing it and squeezing out air pockets, thus reducing the hazard of spontaneous combustion.

David N. Milhan is superintendent of yards and construction for Colorado Fuel and Iron Corporation.

Bogged

(Continued from page 301)

dozer, it was believed the machine could be kept from sliding back from the crest of the more than 10-foot depression dug in previous attempts. With the Fairbanks-Morse engine operating, and the tractor holding, the machine was walked 45 steps to firm ground, a distance of 200 feet.

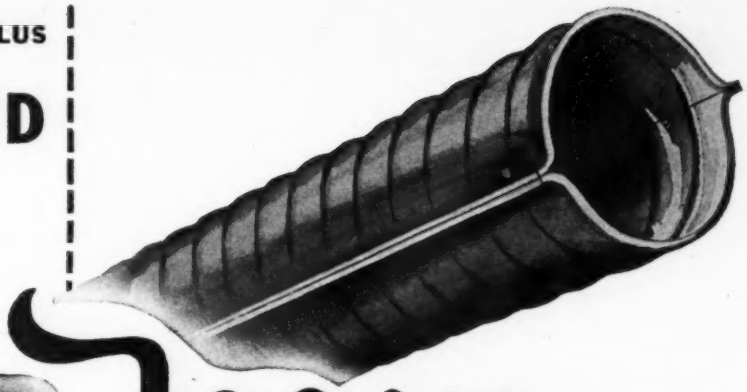
Owing to the extreme depth the machine had been permitted to bury itself in previous attempts to extricate it, the floor was resting at a 40 degree angle, and it was necessary to have a man pouring lubricating oil in the six-cylinder Waukesha engine operating the compressor. To add additional impetus or power, breather caps were removed from the Fairbanks-Morse engine. Rags, saturated in gasoline, were then wrapped around loosely to allow the fumes to enter the cylinders.

One percent of highways carry 20 percent of all the travel.

Follow the Leader
FOR BEST RESULTS
WELLMAN
Williams Type BUCKETS
• The bucket leader is Wellman—pioneer in building buckets of welded rolled steel! Gives you longer, better service at lower cost on all types: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service—3/8 to 16½ yd. capacity.
SEND FOR BULLETIN
THE WELLMAN ENGINEERING COMPANY
7002 CENTRAL AVENUE • CLEVELAND 4, OHIO

GOVERNMENT-OWNED SURPLUS

GALVANIZED CULVERT PIPE . . .



now AVAILABLE

Here is real opportunity to get a quantity of high quality culvert pipe without delay—for surface water disposal. Each section of pipe is fabricated in half sections, flanged and nested for ease of handling and shipping. When in use, the top half is fitted to the bottom half and bolted tight. All sizes from 12 inches to 72 inches in diameter. Over a million and a half dollars worth of this surplus piping is available and stored at War Assets Administration Regional Offices throughout the country. Check the price and size listing at left, then phone your order to your nearest War Assets Administration Regional Office listed below . . . or if you wish, clip the coupon—indicate sizes and quantity wanted—and *mail right now.*

This surplus property subject to prior sale.

CORRUGATED . . IN HALF SECTIONS . . NESTED . . FLANGED TYPE FOR BOLTING

12"	.42 per ft.	36"	1.53 per ft.
18"	.45 per ft.	48"	2.04 per ft.
24"	.75 per ft.	60"	2.93 per ft.
30"	.93 per ft.	72"	3.59 per ft.

VETERANS OF WORLD WAR II: This surplus property is offered to priority claimants including Veterans of World War II. To help you in purchasing surplus property, a Veterans' Unit has been established in each of our Regional Offices.

ORDER FORM

TO WAR ASSETS ADMINISTRATION:

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Name..... Tel. No.....

Firm.....

Address.....

City..... State.....

MAIL TODAY

516

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane Cincinnati • Fort Worth (Telephone 3-5381)

Notes from the manufacturers

The Cooper-Bessemer Corporation, Mount Vernon, Ohio, recently appointed Walter F. Myers as assistant district manager of their Washington, D.C. office, to succeed T. E. Kraner who was appointed manager of the company's Venezuela branch.

H. O. Penn Machinery Company, Inc., New York, released information that following the untimely passing of Hamilton O. Penn, the controlling interests of the company have been acquired equally by Ralph L. Johnson and Stuart A. Wade and who are president and vice-president respectively.

The Euclid Road Machinery Co., Cleveland, Ohio, has appointed H. W. Hiscox as sales representative for Virginia and West Virginia; George M. Perry has joined their Export Department as assistant to Manager P. H. Malenchini; Thomas A. Cantrell has been placed in charge of field engineering.

Brooks Equipment and Mfg. Co., Knoxville, Tenn., announces the appointment of John W. Peters, one to their Sales Representatives, as Acting Sales Manager, replacing R. S. Tucker who has resigned. H. H. Houston, Jr. will be in charge of Sales Promotion for the Manufacturing Division.

Athey Products Corporation, Chicago, Ill., announces that W. W. Fulton has returned to their sales staff after serving the U. S. Navy since January, 1943.

Portland Cement Association, Chicago, Ill., has established a Conservation Bureau, headed by E. C. Wenger. The new bureau is set up to fields of water supply, sewage disposal, flood control, river and harbor development, shore and beach protection, soil erosion control, drainage, irrigation, reclamation, hydroelectric developments and similar activities.

The Phosphate Mining Company, acquired during 1945 by the Virginia-Carolina Chemical Corporation, announces the closing of its office at 110 William St., New York, as of April 1st and the transfer of the company and its personnel to the home office of the parent company in the Richmond Trust Building, 627 East Main St., Richmond, Virginia.

The American Hoist & Derrick Co., St. Paul, Minn., recently made two changes in key personnel when they appointed Raymond J. Dervey of St. Paul to take charge of the company's Pittsburgh office and relieve Ralph Thomson who has been made manager of the New York office.

U. S. Department of the Interior Bureau of Reclamation recently appointed Russell S. Lieurance, lately discharged from the Army, as acting construction engineer for the Boysen and Owl Creek units of the Missouri Basin project with offices in Thermopolis, Wyo. Prior to entering the Army, Lieurance had been construction engineer at the Bureau's Altus, Okla., Project.

Sterling Engine Company, Buffalo, N. Y., has purchased the manufacturing and servicing rights to the high-speed diesel engines formerly produced at the Superior Engine Division, Springfield, Ohio, of the National Supply Co., Pittsburgh. Production of the engines will be taken over by Sterling as soon as tools and inventory can be transferred from Springfield to Buffalo.

LaPlant-Choate Manufacturing Co., Cedar Rapids, Iowa, announces the formation of a completely new world-wide dealer sales and service organization, with a number of new dealers already appointed. R. E. (Ed) Galvin, newly named Executive Vice-President and General Sales Manager, informed district sales representatives of the company's new sales policies.

Extra DRILLING DOLLARS for you!

For contractors, small quarries and mines, modern Bucyrus-Erie 21-W and 22-W churn drills offer profit possibilities worth investigating. These mobile machines, widely popular among water well drillers, drill 4" to 10" holes with the same hard-hitting speed as larger Bucyrus-Erie blast hole drills. If you have only part-time drilling work, you can take advantage of the speed and economy of these machines by keeping them busy on contract, rental, or water well jobs over a large terrritory.

In planning your future equipment set-up, study the possibilities these modern machines have to offer. 22W46

BUCYRUS ERIE

SOUTH MILWAUKEE WISCONSIN

Whatever the type of jack, a Simplex is safer and easier to operate.

SIMPLEX WORLD'S MOST COMPLETE LINE OF JACKS

LEVER
SCREW
HYDRAULIC

Ask for Catalog 45

Templeton, Kenly & Co., Chicago 44, Ill.

On most jobs When Excavating is Necessary

You'll most likely come face to face with one or more Owen buckets, should your travels take you to an excavating job.

The reason why is most simple, for consistent superior bucket performance by Owens is responsible for their widespread use and acceptance.

Bring your equipment catalog files up to date NOW by requesting your copy of the latest Owen Catalog.

A MOUTHFUL AT EVERY BITE

The OWEN BUCKET Co.

6095 Breakwater Avenue Cleveland, Ohio

Branches: New York Philadelphia Chicago Berkeley, Cal.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

CRANE, 1 yd. P&H, Model 600, crawler type, 40 ft. boom. Condition EXCELLENT. This machine has been used for fabrication lifting only; has never had shovel or bucket duty. Price $7,500. Immediate delivery. C. K. Depew, P.O. Box 683, New Canaan, Conn.

One 50 ft. crane boom suitable for 1 yd. or 1¼ yd. machine. Inquire at:

Canger Contracting Co.
1 Hill Street
Paterson, N. J.

One 50B Bucyrus-Erie highlift steamshovel. Ser. No. 4688, on caterpillar track, 30-foot boom, 19-foot dipper sticks, 1½ yard bucket. In good working condition, located near Birmingham, Alabama. Also: 1½ yard bucket and a lot of spare parts for 50B steamshovel.

For further information and inspection arrangements, write to:

Hugo Neu
31 Nassau Street
New York 5, New York

PRICED FOR QUICK SALE:

NORTHWEST DRAGLINE WITH 1¾ YD. BUCKET; FIVE BOTTOM-DUMP EUCLIDS, NINE YD. CAPACITY G. M. DIESEL POWER, EIGHTEEN INCH TIRES; ONE CATERPILLAR TRACTOR WITH LETOURNEAU BULLDOZER; ONE ADAMS MOTOR-GRADER, WITH 12 FT. BLADE, TANDEM DRIVE; THREE KOHLER LIGHT PLANTS. Will sell as a unit or will sell hauling equipment separately.

Box 3144

Shovels: ½ yd.; 1 yd.; 2 yd. Draglines: 1 yd.; 2 yd.; 3 yd. Horizontal drill for coal stripping. 3" centrifugal pump. Dragline buckets: 1¾ yd. and 4 yd. Box 3146

FOR SALE—DRAGLINE BUCKET

One 2½ cu. yd. Type AY Bucyrus-Erie Dragline Bucket. Good condition, five-toothed lip surfaced with Stainweld. Price $800.00, with some fittings. Located at Cooley Brothers, Lehigh, Oklahoma.

FOR SALE — SURPLUS EQUIPMENT

30-B Bucyrus steam crane No. 4112, 55 ft. boom, fairleads and Page 1 yd. dragline bucket, light plant, equipped piledriving, extra high lift shovel front 1 yd. Spare parts.
41-B Bucyrus steam crane No. 4994, 50 ft. boom, 13 ft. jib, fairleads and 1 yd. dragline bucket, light plant, oversized boiler, equipped for piledriving, reconditioned late 1944. Spare parts.
2—¾ yd. Owen type J clamshell bucket.
2—No. 7 McKiernan-Terry hammers, flat anvils.
1—9-B-3 McKiernan-Terry round anvil. (NEW)
Metco metallizing unit complete, Type E-2 gun, hose, wire, shaft and air unit. (NEW).

JUTTON-KELLY COMPANY
13240 Alber Ave., Dearborn **Phone OR-8300 Michigan**

For Sale—

SHASTA DAM SAND AND GRAVEL PLANT AND 10-MILE CONVEYOR EQUIPMENT

Including:
8500—36" AND 42" IDLERS.
Pulleys and Drives.
LATE MODEL 200 HP., 1800 R.P.M. GE MOTORS, complete with Starting Equipment.
Western Gear Reducers, 200 HP., 40 to 1 Ratio.
8 x 12 MARCY ROD MILL.
Dorr Hydroseparators and Classifiers.
30" Tripper and Trestle.
Merrick Feedoweights and Weightometers.
All Types of Pumps, complete with Drives.
42" Pendulum Boom Conveyors, 100' and 200'.
Electric Line Equipment, Transformers, Motors and Supplies.
Other Miscellaneous Contractors' Equipment.

Subject to Prior Sale

Write, Wire or Telephone Redding 1440

COLUMBIA CONSTRUCTION CO., INC.
Box 579 **Redding, California**

B-Erie 1¼-yd. gas-air shovel, GA-3, rebuilt.
Bucyrus 50B and 80B steam shovels.
Marion electric shovels, 4, 3, and 1-yd.
P&H 1½-yd. Model 700 dragline-crane, gas.
Northwest No. 5, 1¼-yd. shovel-dragl., gas.
Monighan 3-yd. electric walking dragline.
Porter, Vulcan 18-ton stm. locos., 36", reblt.
Vulcan 29-ton stm. locomotives, 42" & std. ga.
Whitcomb 8-ton gas locomotives, 24" ga., (4).
American 50-ton stm. S/T locomotive, std. ga.
Baldwin 60-ton steam locomotive, std. ga.
Cedar Rapids travel type asphalt plant.
Allis Chalmers 27" Gates 12K gyratory crusher.
A-C Superior 54"x24" crushing rolls.
Euclid 6-yd. bottom dump crawler wagons (8).
Hydroelectric gen. plant, 1000 KVA, 65' head.
Gold Placer Dredge, 7½', elec., wood, 28'.
B-Erie 52B Diesel 2-yd. shovel front att.
Boiler tubes, 236-1¾"x5', ferrules, (new).
H. Y. SMITH CO., 828 B'way, Milwaukee 2, Wis.

Surplus Hydraulic Press Stock Available For Immediate Shipment.

5 Beco Portable Hydraulic Presses—100 tons capacity consisting of: Press cylinder (ram), 4 speed pump with high pressure globe valve, 5' 0" high pressure hose, 5' 0" oil return hose.

4 100 ton Press Frames, including:
1 Frame head
1 Cylinder back plate
4 Alloy steel back plate rods, 1"x20" with 8 nuts
1 Frame base with tie rods and nuts
4 Alloy steel frame rods 1"x48" with nuts

2 Extension sets, consisting of:
4 Sprocket lugs
4 Rod connectors
4 Extension rods, 24" with nuts
4 Extension rods, 38" with nuts

4 Extension rods, 48" alloy steel, with nuts.

1 Frame for track repair work consisting of:
1 Special back plate
3 Rods with nuts to attach press cylinder to track press frame

2 pcs. 10' 0" High pressure hose with fittings for 100 ton Press.

Bucyrus-Erie Company,
South Milwaukee, Wisconsin

SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS

2—⅜ cu. yd. Skimmer Scoop Dipper—10-B.
2—½ cu. yd. Drag Shovel Dipper—17-B.
3—½ cu. yd. Skimmer Scoop Dipper—17-B.
1—¾ cu. yd. Welded Dipper—21-B.
1—1¼ cu. yd. Drag Shovel Dipper—38-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper—42-B.
1—1½ cu. yd. type 4 Med. Duty Dipper.
1—2 cu. yd. Rock Dipper—75-B.
1—2¼ cu. yd. Inserted Type Dipper—50-B.
1—2½ cu. yd. Inserted Type—55-B.
1—3½ cu. yd. Coal Loading Dipper—75-B.
1—4 cu. yd. Type IV Medium Duty Dipper—100-B.

F.O.B. Works

Write for any further information desired.

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee **Wisconsin**

3—Ford Grico tractors, two 95 H.P. motor each unit, 10 wheels. Excellent buy.

New York Trap Rock Corporation
230 Park Avenue
New York 17, New York

1—New 12-yd. L.P. LeTourneau Scraper.
1—Used 80 H.P. Crawler Cletrac
2—Used 7-yd. Continental Scrapers
1—Used 12-yd. Austin-Western Scraper
Box 3149

One practically new 4 cubic yard type AX Bucyrus-Erie dragline bucket. Box 3145

Shovel front for 37B, first class condition price $1500 and located Duluth, Minn. Contact Delta Farms Company, Lockport, La.

ENGINEERS AND MECHANICS step up your own skill with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a handy form. Fully Illustrated and Easy to Understand. Highly Endorsed. Check the book you want for 7 days' Free Examination. Send No Money. Nothing to pay postman.

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☐ Carpenters, $6
☐ Auto, $4
☐ Refrigeration, $4

If satisfied you pay only $1 a month until purchase price is paid.

AUDEL, Pub., 49 W. 23rd St., N. Y. 10, N. Y.

EQUIPMENT WANTED

WANTED TO RENT OR BUY

¾, 1, or 1¼ yd. skimmer scoop for either Lorain, P&H, Northwest or Lima.

Austin Road Company
P. O. Box 1590 **Dallas 8, Texas**

5 yd. dragline. Send description, price.
Box 3147

2 yd. dragline. Send description price.
Box 3148

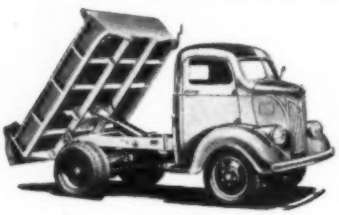
POSITIONS WANTED

Shovel operator desires steady work in quarry or open pit mine. Familiar with Bucyrus-Erie equipment. Can furnish excellent references. Married, 40 years old. Box 9260

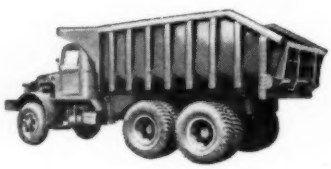
The BEST COSTS LESS

TRADE MARK

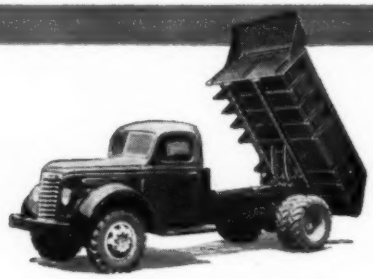
For years Gar Wood has consistently offered truck and trailer equipment of utmost utility and outstanding value. Leadership in this field resulted from this policy. Gar Wood equipment costs less in the long run because it is better built to give peak performance and lasting satisfaction.



Type C12 Body and Model D6 or D7 Hoist. Dumping angle 55°.



Type X-112 Extra heavy duty Body with automatic downfolding tailgate.

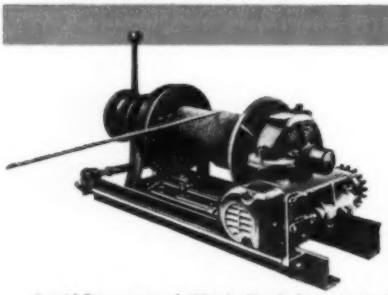


Special rock Body, scoop type rear end. Model F4CA cam and roller Hoist.

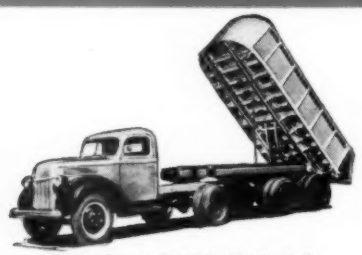
Type W12 Body. Model F4C cam and roller Hoist. Capacity 6 cu. yds.

Type X-112 Extra heavy duty Body, scoop end, with Model T-4440 Hoist. Capacity 19 cu. yds.

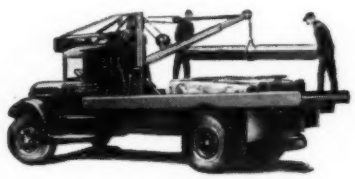
Type W12 Body, front recessed for Model TV83 Hoist. Capacity 15 cu. yds.



Rapid Reverse truck Winch. Single lever control. Capacities 15,000 to 60,000 pounds line pull.



West Coast Special W-12 Body, Model F8C cam and roller Hoist. Capacity 10 cu. yds.



Telescopic boom Crane. Radius 8 to 20 feet.

GAR WOOD INDUSTRIES, INC.

7924 RIOPELLE ST. • DETROIT 11, MICH.

WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

OTHER PRODUCTS: • TRUCK TANKS • ROAD MACHINERY • HEATING EQUIPMENT • MOTOR BOATS

ACCO-LOC SAFETY SPLICE

No Distortion of Rope Structure
Always 100% Efficient

Note from this unretouched photograph how the six strands of the dead end have been pushed down and locked into place—and how the six strands of the pull or load rope have not been distorted in any way. Such lack of rope distortion would be impossible with the old, obsolete hand-tuck splicing.

When you cut the ACCO-LOC Safety Splice with an abrasive cut-off machine you see, by cross-section, why this new and revolutionary method for making wire rope endings is so efficient. Not the slightest distortion of rope structure; maintains equalized stresses in all strands; no off-center pull on the load rope.

More than being 100% efficient, the ACCO-LOC Safety Splice is safe. No seizing wires to loosen; no wire ends to barb. Extremely flexible and easy to handle. Send today for fully detailed literature.

ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Emlenton, Pa., Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

Select the type of Primacord best suited to your particular job. Then use it, and *forget* the dangers of stray currents from electrical storms and power lines. For with Primacord — and Primacord alone — no cap *ever* goes into the hole . . . no cap is *ever* attached until just before the blast.

Consider, too, these other advantages you get with Primacord . . .

- A tried and proved time delay feature for more efficient shot sequence.
- In a properly loaded hole the Primacord is in contact with every cartridge. This direct detonation minimizes the chance for unexploded powder left in the rock pile.
- The light weight of Primacord makes for easier handling on the job.
- A system for faster hooking-up with square knots and half hitches, in plain sight, makes for easy hook-up inspection.

It's easy to see why Primacord with all these advantages is still the recognized favorite with pit and quarry operators everywhere.

P-19

THE ENSIGN-BICKFORD COMPANY · Simsbury, Connecticut

PRIMACORD-BICKFORD Detonating • Fuse •